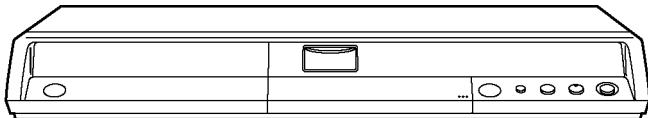


Service Manual

DVD Recorder



Notes: This model's RAM/Digital P.C.B.

- RFKNEH55P(P)
- RFKNEH55PC(PC).

When replacing Main P.C.B. or EEPROM, "UNFORMAT" indication is displayed and HDD must be formatted.

When replacing HDD, it is necessary to update the firmware.

Please prepare the update disc.
(After that, FORMAT is necessary)

After that, programme in the HDD will be lost.
In detail, please refer to each content in this service manual.

Caution:

Pairing of RAM Drive and Digital P.C.B. as "RAM/Digital P.C.B. Module" have to be replaced together.
If the pairing is changed, RAM Drive unit has to be re-aligned. Because the alignment data for RAM Drive Unit is stored in Digital P.C.B..

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"DTS" and "DTS 2.0 + Digital Out" are trademarks of Digital Theater Systems, Inc.

U.S. patent Nos. 4,631,603, 4,577,216, 4,819,098, and 4,907,093.

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DMR-EH55P9 DMR-EH55PC9

Vol. 1

Colour

(S).....Silver Type

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⚠️ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

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1 Safety Precaution

1.1. General guidelines

1. When servicing, observe the original lead dress. If a short circuit is found, replace all parts which have been overheated or damaged by the short circuit.
2. After servicing, see to it that all the protective devices such as insulation barriers, insulation papers shields are properly installed.
3. After servicing, make the following leakage current checks to prevent the customer from being exposed to shock hazards.

1.1.1. Leakage current cold check

1. Unplug the AC cord and connect a jumper between the two prongs on the plug.
2. Measure the resistance value, with an ohmmeter, between the jumpered AC plug and each exposed metallic cabinet part on the equipment such as screwheads, connectors, control shafts, etc. When the exposed metallic part has a return path to the chassis, the reading should be between $1M\Omega$ and $5.2M\Omega$.

When the exposed metal does not have a return path to the chassis, the reading must be ∞ .

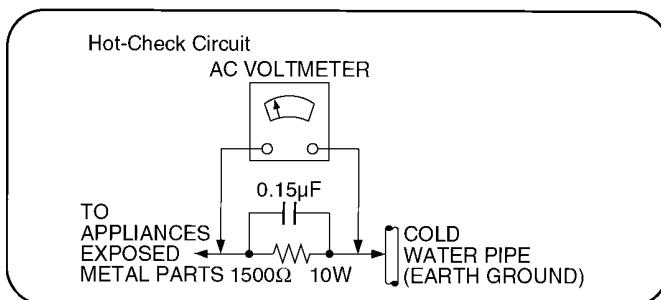


Figure 1

1.1.2. Leakage current hot check (See Figure 1.)

1. Plug the AC cord directly into the AC outlet. Do not use an isolation transformer for this check.
2. Connect a $1.5k\Omega$, 10 watts resistor, in parallel with a $0.15\mu F$ capacitors, between each exposed metallic part on the set and a good earth ground such as a water pipe, as shown in Figure 1.
3. Use an AC voltmeter, with 1000 ohms/volt or more sensitivity, to measure the potential across the resistor.
4. Check each exposed metallic part, and measure the voltage at each point.
5. Reverse the AC plug in the AC outlet and repeat each of the above measurements.
6. The potential at any point should not exceed 0.75 volts RMS. A leakage current tester (Simpson Model 229 or equivalent) may be used to make the hot checks, leakage current must not exceed 1/2 milliamper. In case a measurement is outside of the limits specified, there is a possibility of a shock hazard, and the equipment should be repaired and rechecked before it is returned to the customer.

1.2. Caution for fuse replacement

(For English)

CAUTION:

Replace with the same type fuse:
(Manufacturer: Hollyland, Type: 50T, 2A, 250V)

(For Canadian French)

ATTENTION:

Utiliser un fusible de recharge de même type:
(Fabricant: Hollyland, Type: 50T, 2A, 250V)

2 Warning

2.1. Prevention of Electrostatic Discharge (ESD) to Electrostatic Sensitive (ES) Devices

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatic Sensitive (ES) Devices. Examples of typical ES devices are integrated circuits and some field-effect transistor-sand semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by electrostatic discharge (ESD).

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any ESD on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging ESD wrist strap, which should be removed for potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
4. Use only an anti-static solder removal device. Some solder removal devices not classified as "anti-static (ESD protected)" can generate electrical charge sufficient to damage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material).
7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

Caution

Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ES device).

IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety. These parts are marked by Δ in the schematic diagrams, Exploded Views and replacement parts list. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock, fire, or other hazards. Do not modify the original design without permission of manufacturer.

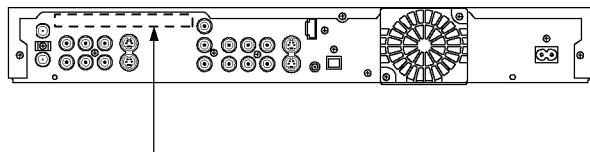
2.2. Precaution of Laser Diode

CAUTION:

This product utilizes a laser diode with the unit turned "on", invisible laser radiation is emitted from the pickup lens.
Wave length: 662 nm (DVDs)/780 nm (CDs)
Maximum output radiation power from pickup: 100 μW/VDE

Laser radiation from the pickup lens is safety level, but be sure the followings:

1. Do not disassemble the optical pickup unit, since radiation from exposed laser diode is dangerous.
2. Do not adjust the variable resistor on the pickup unit. It was already adjusted.
3. Do not look at the focus lens using optical instruments.
4. Recommend not to look at pickup lens for a long time.



Product complies with DHHS Rules 21 CFR Subchapter J in effect at date of manufacture.
Matsushita Electric Industrial Co., Ltd. Kadoma, Osaka, Japan

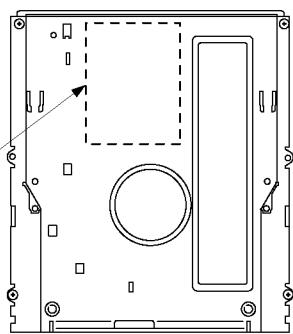
ACHTUNG:

Dieses Produkt enthält eine Laserdiode.
Im eingeschalteten Zustand wird unsichtbare Laserstrahlung von der Laserinheit abgestrahlt.
Wellenlänge: 662 nm (DVDs)/780 nm (CDs)
Maximale Strahlungsleistung der Lasereinheit: 100 μW/VDE

Die Strahlung der Lasereinheit ist ungefährlich, wenn folgende Punkte beachtet werden:

1. Die Lasereinheit nicht zerlegen, da die Strahlung an der freigelegten Laserdiode gefährlich ist.
2. Den werkseitig justierten Einstellregler der Lasereinheit nicht verstellen.
3. Nicht mit optischen Instrumenten in die Fokussierlinse blicken.
4. Nicht über längere Zeit in die Fokussierlinse blicken.

DANGER - VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN. AVOID DIRECT EXPOSURE TO BEAM. (IEC60852-1 IEC/Class 3b)	
注意	-打开时有可见及不可见激光辐射，避免激光束照射。
注意	-ここを開くと可視及び不可視のレーザー光が当ります。 ビームを直視したり、鏡に当さないでください。
CAUTION	CLASS 3B VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN IEC60852-1 IEC/Class 3b
ATTENTION	RAYONNEMENT LASER VISIBLE ET INVISIBLE, CLASSE 3B, EN CAS D'OUVERTURE. EVITTER L'EXPOSITION AU FAISCEAU.
FORSIGTIG	SYNLIG OG USYNLIG LASERSTRÅLING NAR DENNA DEL AR ÖPPNAD. UNDVIK EXPONERING FOR STRÅLEN.
VARO	AVATTAESSA OLET ALTINA LUOKAN 3B NÄKYVÄ JA NÄKYMÄTÖNTÄ LASERSÄTEILYÄ. VARO ALITUSTUMA SATEELLE.
VARNING	KLASS 3B SYNLIG OCH OSYNLIG LASERSTRÅLING NAR DENNA DEL AR ÖPPNAD. UNDVIK EXPONERING FOR STRÅLEN.
VORSICHT	SICHTBARE UND UNSICHTBARE LASERSTRÄHLUNG, KLASSE 3B, WENN ABDECKUNG GEÖFFNET NICHT DEM STRAHL AUSSETZEN.
CAUTION	VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN (IEC60852-1)
ATTENTION	RAYONNEMENT LASER VISIBLE ET INVISIBLE EN CAS D'OUVERTURE. EXPOSITION DANGEREUSE AU FAISCEAU.
ADVARSEL	SYNLIG OG USYNLIG LASERSTRÅLING VED ÅBNING. UNNGÅ UDSETTELSE FOR STRÅLING.
VARO!	AVATTAESSA OLET ALTINA NÄKYVÄ JA NÄKYMÄTÖNTÄ LASERSÄTEILYÄ. ALA KATSO SATEESEN.
VARNING	SYNLIG OCH OSYNLIG LASERSTRÅLING NAR DENNA DEL AR ÖPPNAD BETRAKTA EJ STRÅLEN.
VORSICHT	SICHTBARE UND UNSICHTBARE LASERSTRÄHLUNG, WENN ABDECKUNG GEÖFFNET NICHT DEM STRAHL AUSSETZEN.
ADVARSEL	SYNLIG OG USYNLIG LASERSTRÅLING NÅR ÅPNES. UNNGÅ EKSPONERING FOR STRÅLING.



CAUTION!

THIS PRODUCT UTILIZES A LASER.

USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

2.3. Service caution based on legal restrictions

2.3.1. General description about Lead Free Solder (PbF)

The lead free solder has been used in the mounting process of all electrical components on the printed circuit boards used for this equipment in considering the globally environmental conservation.

The normal solder is the alloy of tin (Sn) and lead (Pb). On the other hand, the lead free solder is the alloy mainly consists of tin (Sn), silver (Ag) and Copper (Cu), and the melting point of the lead free solder is higher approx.30 degrees C (86°F) more than that of the normal solder.

Definition of PCB Lead Free Solder being used

The letter of "PbF" is printed either foil side or components side on the PCB using the lead free solder.
(See right figure)

PbF

Service caution for repair work using Lead Free Solder (PbF)

- The lead free solder has to be used when repairing the equipment for which the lead free solder is used.
(Definition: The letter of "PbF" is printed on the PCB using the lead free solder.)
- To put lead free solder, it should be well molten and mixed with the original lead free solder.
- Remove the remaining lead free solder on the PCB cleanly for soldering of the new IC.
- Since the melting point of the lead free solder is higher than that of the normal lead solder, it takes the longer time to melt the lead free solder.
- Use the soldering iron (more than 70W) equipped with the temperature control after setting the temperature at 350 ± 30 degrees C (662±86°F).

Recommended Lead Free Solder (Service Parts Route.)

- The following 3 types of lead free solder are available through the service parts route.

RFKZ03D01K-----(0.3mm 100g Reel)
RFKZ06D01K-----(0.6mm 100g Reel)
RFKZ10D01K-----(1.0mm 100g Reel)

Note

* Ingredient: tin (Sn), 96.5%, silver (Ag) 3.0%, Copper (Cu) 0.5%, Cobalt (Co) / Germanium (Ge) 0.1 to 0.3%

2.4. How to replace the Lithium Battery

REPLACEMENT PROCEDURE

1. Remove the Top case, Front Panel, SD Card P.C.B., RAM/Digital P.C.B. Module, DV Jack P.C.B., HDD, Rear Panel, Front (L) P.C.B. and Main P.C.B. by referring the Disassembling Procedure.
2. Unsolder the Lithium Batteries: B7501 and then replace it into new one.
(As shown in 14.2.4. The Main P.C.B.)

NOTE:

The lithium battery is a critical component. (Type No.: CR2354-1GUFE Manufactured by Panasonic.)

It must never be subjected to excessive heat or discharge.

It must therefore only be fitted in equipment designed specifically for its use.

Replacement batteries must be of the same type and manufacture.

They must be fitted in the same manner and location as the original battery, with the correct polarity contacts observed.

Do not attempt to re-charge the old battery or re-use it for any other purpose.

It should be disposed of in waste products destined for burial rather than incineration.

(For English)

CAUTION

Danger of explosion if battery is incorrectly replaced.

Replace only with the same or equivalent type recommended by the equipment manufacturer.

Discard used batteries according to manufacturer's instructions.

(For French)

PRECAUTION

Le fait de remplacer incorrectement la pile peut présenter des risques d'explosion.

Remplacer la pile uniquement par une pile identique ou de type équivalent recommandée par le fabricant. Se débarrasser des piles usagées conformément aux instructions du fabricant.

3 Service Navigation

3.1. Service Information

This service manual contains technical information which will allow service personnel's to understand and service this model.

Please place orders using the parts list and not the drawing reference numbers.

If the circuit is changed or modified, this information will be followed by supplement service manual to be filed with original service manual.

1) This service manual does not contain the following information, because of the impossibility of sevicing at component level.

- * Schematic Diagram, Block Diagram and P.C.B. layout of RAM/Digital P.C.B. Module.
- * Parts List for individual parts of RAM/Digital P.C.B. Module.
- * Exploded View and Parts List for individual parts of RAM/Digital P.C.B. Module.

2) The following category are recycle module part. Please send them to Central Repair Center.

- * RAM/Digital P.C.B. Module (EH55P:RFKNEH55P, EH55PC:RFKNEH55PC)

3.2. Caution for DivX

Please will always pass the customer "Warning for Customers Who Use the DivX Video-on-Demand content." with the product and get it when you unavoidably exchange EEPROM or P.C.B. including EEPROM (When the product is exchanged, it is the same.).

You must use print attached to service part (EEPROM or P.C.B. including EEPROM) or must use copy of print below as "Warning for Customers who use the DivX Video-on-Demand content."

Information needed without fail for the customer for whom it is used continuing DivX Video-on-Demand Service to "Manual for the customer" is recorded.

Appendix:

- * Parts that memorize user's information are only EEPROM.
- * The registration of Registration Code is possible for half a year up to 6 recorders up to 10 recorders a year.
Replacement of EEPROM or P.C.B. including EEPROM spends one of this.

Registration Code is memorized in EEPROM (RFKFxxxxx).

Model without VHS: Main P.C.B.

Model with VHS: Digital I/F P.C.B. (Power & DVD I/F/P.C.B.)

If exchange above P.C.B. or EEPROM, new registration Code differ from previous Registration Code will be generated.

In this case if your customer uses DivX Video-on-Demand service, he/she will no longer be able to play any content that he/she purchased under that same registration code.

Therefore your customer will need to obtain and register the new registration code.

*Copy this page and cut on the dotted line and give the lower half to your customer.

Warning for Customers who use the DivX Video-on-Demand content.

1. The registration code has been changed for the repair of the product or the product exchange.
2. Obtain and register a new registration code, otherwise you will no longer be able to play DivX Video-on-Demand content.
3. Follow the procedure on the DivX Video-on-Demand web site to register at

<http://vod.divx.com/>

* If you do not use the DivX Video-on-Demand content, please ignore this warning.

4 Specifications

Power supply	AC120 V, 60 Hz	Region number	Region No.1					
Power consumption	Approx. 33 W	Playable discs	DVD-RAM: DVD Video Recording format					
Power consumption in standby mode	Approx. 13.5 W		DVD-R: DVD-Video format, DivX					
Recording system	DVD-RAM: DVD Video Recording format DVD-R: DVD-Video format DVD-R DL (Dual Layer): DVD-Video format DVD-RW: DVD-Video format +R +R DL (Double Layer) +RW		DVD-R DL (Dual Layer): DVD-Video format DVD-RW: DVD-Video format, DVD Video Recording format +R +R DL (Double Layer) +RW					
Optical pick-up	System with 1 lens, 2 integration units (662 nm wavelength for DVDs, 780 nm wavelength for CDs)		DVD-Video DVD-Audio CD-Audio (CD-DA) Video CD CD-R/ CD-RW (CD-DA, Video CD, MP3, JPEG, DivX)					
Recordable discs	DVD-RAM: Ver.2.0 Ver.2.1/3x-SPEED DVD-RAM Revision 1.0 Ver.2.2/5X-SPEED DVD-RAM Revision 2.0 DVD-R: for General Ver. 2.0 for General Ver. 2.0/ 4X-SPEED DVD-R Revision 1.0 for General Ver. 2.x/ 8X-SPEED DVD-R Revision 3.0 for General Ver. 2.x/ 16X-SPEED DVD-R Revision 6.0 for DL Ver. 3.0 for DL Ver. 3.x/ 4X-SPEED DVD-R for DL Revision 1.0 DVD-RW: Ver. 1.1 Ver. 1.x/ 2X-SPEED DVD-RW Revision 1.0 Ver. 1.x/ 4X-SPEED DVD-RW Revision 2.0 Ver. 1.x/ 6X-SPEED DVD-RW Revision 3.0 +R: Ver. 1.0 Ver. 1.1 Ver. 1.2 Ver. 1.3 for DL Ver. 1.0 +RW: Ver. 1.1 Ver. 1.2/ 4X-SPEED		Recording time Max. 8 hours (using 4.7 GB disc) XP : Approx. 1 hour SP : Approx. 2 hours LP : Approx. 4 hours EP : Approx. 6 hours/8 hours Max. Approx. 355 hours with 200GB HDD (EP 8H mode) XP : Approx. 44 hours SP : Approx. 89 hours LP : Approx. 177 hours EP : Approx. 266/355 hours					
Internal HDD Capacity	200 GB	Approx.						
Quick Start for Recording & EPG Display (Quick Start: ON)	About 1 Sec. Quick Start for Recording & EPG Display (when connecting to TV using Video or S-Video terminal) *From the power on, recording starts about 1 second after the REC button is pressed. If the TV GUIDE button is pressed while the unit is off, the Electronic Program Guide(EPG) starts displaying in less than 1 second, with the full EPG displaying in about 1.5 seconds.							

Approximate transferring (dubbing) times (Max. speed)

HDD		5X Speed DVD-RAM		16X Speed DVD-R		4X Speed DVD-R DL (Dual Layer)		4X Speed(*1) DVD-RW		8X Speed(*2) +R		2.4X Speed +R DL (Dual Layer)		4X Speed +RW	
		Rec mode	Rec time	Required time	Speed	Required time	Speed	Required time	Speed	Required time	Speed	Required time	Speed	Required time	Speed
XP		12 min.	5x	6 min.	10x	15 min.	4x	15 min.	4x	8 min. 35s.	7x	25 min.	2.4x	15 min.	4x
SP		6 min.	10x	2 min. 25s.	25x	7 min. 30s.	8x	7 min. 30s.	8x	4 min. 10s.	14x	12 min. 30s.	4.8x	7 min. 30s.	8x
LP	1 hour	3 min.	20x	1 min. 15s.	48x	3 min. 45s.	16x	3 min. 45s.	16x	2 min. 25s.	25x	6 min. 15s.	7.2x	3 min. 45s.	16x
EP(6H)		2 min.	30x	52s.	69x	2 min. 30s.	24x	2 min. 30s.	24x						
EP(8H)		1 min. 30s.	40x	42s.	86x	1 min. 53s.	32x	1 min. 53s.	32x						

Note) The above rated value indicates the fastest time and speed required for copying one-hour title from HDD to each disc in the above list supporting High-Speed copying.

The amount of time and speed may vary depending on the conditions such as the area on where information is written or unique feature on the disc.

*1: In this unit, copying with 6X Speed DVD-RW disc will be performed at the same speed as 4X Speed DVD-RW disc takes.

*2: In this unit, copying with 16X Speed +R disc will be performed at the same speed as 8X Speed +R disc takes.

Compression Method	DVD (DivX), CD (DivX)	Audio system	
	DivX 3.11, 4.x, 5.x GMC (Global Motion Compensation) is not supported.	Recording system	Dolby Digital (2ch) Linear PCM (XP mode 2ch)
	DVD (DivX), CD (DivX) Common Items	Analog Input	LINE (pin jack) x 3 Reference input: 309 mVrms FS: 2 Vrms (1 kHz, 0 dB) Input impedance: 47 kohm
	Maximum number of folders: 300 Recognizable folders per disc on this unit (including the root folder)	Analog Output	LINE (pin jack) x 2 Reference output: 309 mVrms FS: 2 Vrms (1 kHz, 0 dB) Output impedance: 1 kohm (Load impedance: 10 kohm)
	Maximum number of files: 200 Recognizable DivX files per disc on this unit*1	Number of channels	Recording: 2 channels Playback: 2 channels
	*1Total number of recognizable file including MP3, JPEG, DivX and other type of files is 4000.)	Digital Output	Digital audio optical output connector x 1 (PCM, Dolby Digital, DTS)
	MP3	DV Input	IEEE 1394 Standard, 4pin
	Format: ISO9660 level1 or 2 (except for extended formats), Joliet	HDMI Output	19 pin typeA x 1 HDMI Ver. 1.2a (EDID Ver.1.3)
	Compatible compression rate: 32kbps ~ 320kbps	G-LINK terminal	Only use the included IR Blaster
	Compatible sampling rate: 16kHz, 22.05kHz, 24kHz, 32kHz, 44.1kHz, 48kHz	SD System	
This unit is not compatible with ID3 tags.		SD Card Slot	SD memory card slot: 1pc
CD (JPEG)		Still Picture (JPEG, TIFF)	
Format: ISO9660 level1 or 2 (except for extended formats), Joliet		Compatible Media	SD memory card */Multi Media Card *Includes miniSD™ cards. (A miniSD™ card adapter needs to be inserted.)
Compatible pixels: between 34 x 34 and 6144 x 4096 pixels		Format	FAT12, FAT16
Sub sampling 4:2:2 or 4:2:0		Image file format	JPEG conforming to DCF (Design rule for Camera File system) TIFF (Uncompressed RGB chunky) DPOF Compatible Sub sampling: 4:2:2 or 4:2:0
This unit is not compatible with MOTION JPEG.		Number of pixels	between 34 x 34 and 6144 x 4096 pixels
MP3, CD (JPEG) Common Items		Thawing time	Approx. 3sec (6M pixels, JPEG)
Maximum number of folders :99		SD Video (MPEG2)	
Recognizable folders per disc on this unit (including the root folder)		Compatible Media	SD memory card */Multi Media Card *Includes miniSD™ cards. (A miniSD™ card adapter needs to be inserted.)
Maximum number of MP3 files :999		Codec	MPEG2 (SD-Video Entertainment Video Profile)
Recognizable MP3 files per disc on this unit*1		File format	SD-Video format conforming
Maximum number of JPEG files :999 Recognizable JPEG files per disc on this unit*1		Video Recording conversion and transfer is possible from card to HDD or DVD-RAM disc.	
This unit is compatible with multi-session		After Video Recording conversion and transfer to HDD or DVD-RAM disc, the playback is possible.	
This unit is not compatible with packet writing.		Others	
*1 Total number of recognizable file including MP3, JPEG, DivX and other type of files is 4000.		Dimensions	Approx. 430 (W) x 58 (H) x 329 (D) mm [Approx. 16 15/16" (W) x 2 5/16" (H) x 13" (D)]
Input	LINE (pin jack) x 3, 1.0 Vp-p; 75 ohm	Mass	Approx. 4.2 kg (9.24lbs)
	S connector x 3	Operating temperature range	5°C - 40°C (41°F - 104°F)
	Y: 1.0 Vp-p; 75 ohm C: 0.286 Vp-p; 75 ohm	Operating humidity range	10 %-80 % RH (no condensation)
Output	LINE (pin jack) x 2, 1.0 Vp-p; 75 ohm	Clock unit	Quartz-controlled 12-hour digital display
	S connector x 2	LASER Specification (Class I LASER Product)	
	Y: 1.0 Vp-p; 75 ohm C: 0.286 Vp-p; 75 ohm	Wave length	780 nm(CDs), 662 nm(DVDs)
Component video output (480i/480P)	Y: 1.0 Vp-p; 75 ohm Pb: 0.7 Vp-p; 75 ohm Pr: 0.7 Vp-p; 75 ohm	Laser power	No hazardous radiation is emitted with the safety protection.
		Solder	These models use lead free solder (PbF).

Notes : Mass and dimensions are approximate.

Specifications are subject to change without notice.

5 Feature

5.1. About DivX

5.1.1. General

DivX is a new video compressing format that is applied MPEG4 technology to improve image quality and the compressibility, and it is developed by the DivXNetworks, Inc.. Video file of high resolution and the high picture quality can be made though it is a high compressibility.

DivX codec is necessary for converting video to DivX file and .playback files made.

5.1.2. Operating Instructions about DivX Video-on-Demand Content

DivX Video-on-Demand (VOD) content is encrypted for copyright protection. In order to play DivX VOD content on this unit, you first need to register the unit.

Follow the on line instructions for purchasing DivX VOD content to enter unit's registration code and register unit. Visit www.divx.com/vod for more information.

Display unit's registration code.



- We recommend that you make a note of this code for future reference.
- After playing DivX VOD content for first time, another registration code is then displayed in "DivX Registration". Do not use this registration code to purchase DivX VOD content. If you use this code to purchase DivX VOD content, and then play content on this unit, you will no longer be able to play any content that you purchased using previous code.
- If you purchase DivX VOD content using a registration code different from this unit's code, you will not be able to play this content. ("Authorization Error" is displayed.)

Regarding DivX content that can only be played a set number of times

Some DivX VOD content can only be played a set number of times.

When you play this content, remaining number of plays is displayed. You cannot play this content when number of remaining plays is zero. ("Rental Expired" is displayed.)

When playing this content

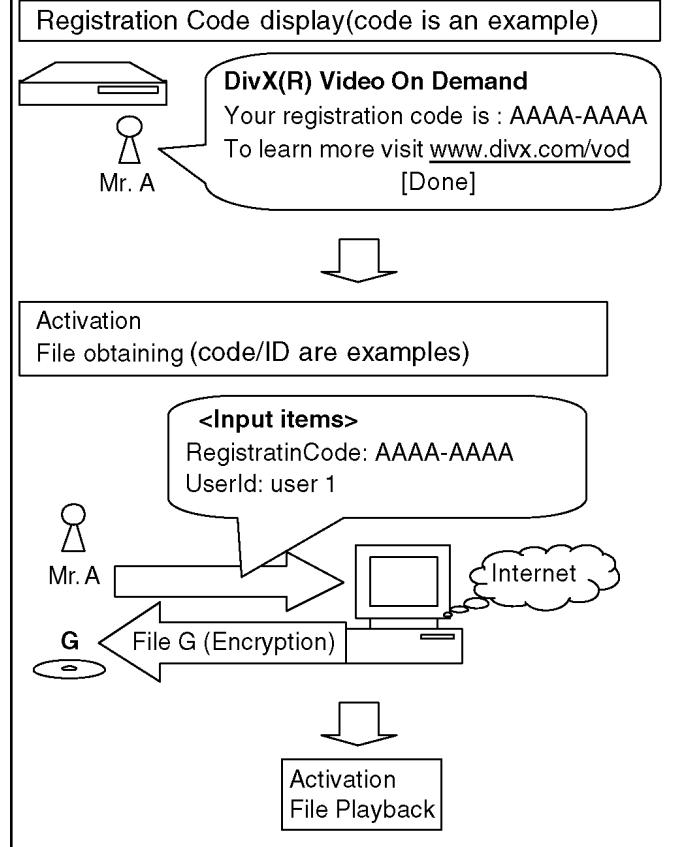
- Number of remaining plays is reduced by one if
 - you press [POWER].
 - you press [STOP].
 - you press [$\blacktriangleleft\blacktriangleright$ SKIP], [$\blacktriangleleft\blacktriangleright$ SLOW/SEARCH] or [$\blacktriangleright\blacktriangleleft$ SLOW/SEARCH] etc. and arrive at another content or start of content being played.
 - scheduled recording starts on HDD.
 - you press [DRIVE SELECT] to change drive.

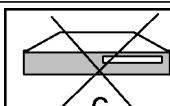
* Resume functions do not work.

Typical Playback procedure of DivX VOD (Video On Demand)

Case 1	When DivX VOD is used newly.
Case 2	When EEPROM or P.C.B. including EEPROM was replaced for repairing.
Case 3	When recorder was exchanged to another recorder for repairing.
Case 4	When customer own second recorder
Case 5	When owner of recorder was changed to another.

Case 1. When DivX VOD is used newly.

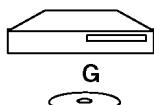




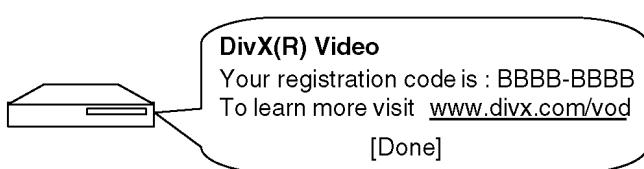
Activation cannot be done for other recorders by file G.

<Activation>

Recorder is set for user 1
→ File G can be played back



Registration Code display (code is an example)



DivX(R) Video

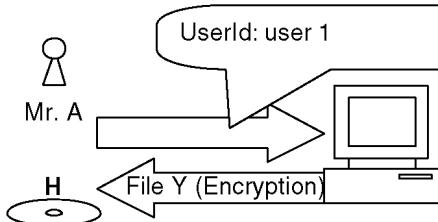
Your registration code is : BBBB-BBBB
To learn more visit www.divx.com/vod
[Done]

*The code different from code before Activation is displayed.

(This code is unnecessary for Mr. A)

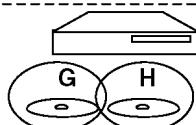


Ovtainment /Playback of additional file after Activation (code/ID is an example)



User Id: user 1

File of user 1 can be played back



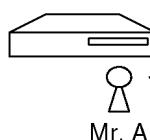
Case 2

When EEPROM or P.C.B. including EEPROM was replaced for repairing.

Case 3

When recorder was exchanged to another recorder for repairing.

New Registration Code is displayed
(Code is an example)



DivX(R) Video On Demand

Your registration code is : CCCC -CCCC
To learn more visit www.divx.com/vod
[Done]

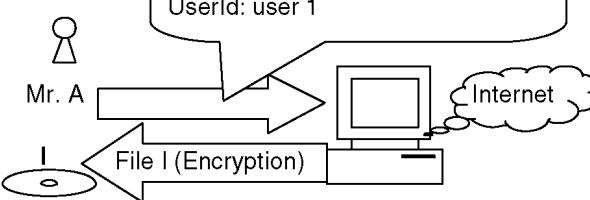
Mr. A



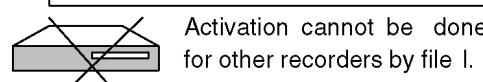
Activation
File obtaining (code/ID are example)

<Input items>

Registration Code: CCCC-CCCC
User Id: user 1



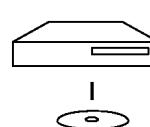
Activation File Playback



Activation cannot be done for other recorders by file I.

<Activation>

Recorder is set for user 1
→ File G, H, I can be played back



Registration Code display after Activation (example)

DivX(R) Video On Demand

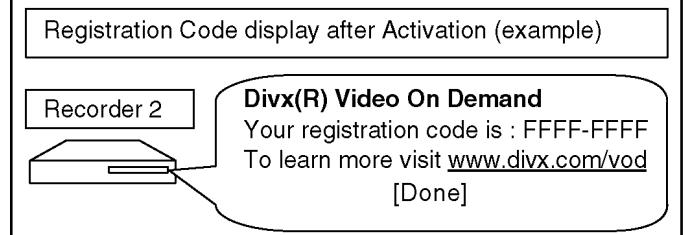
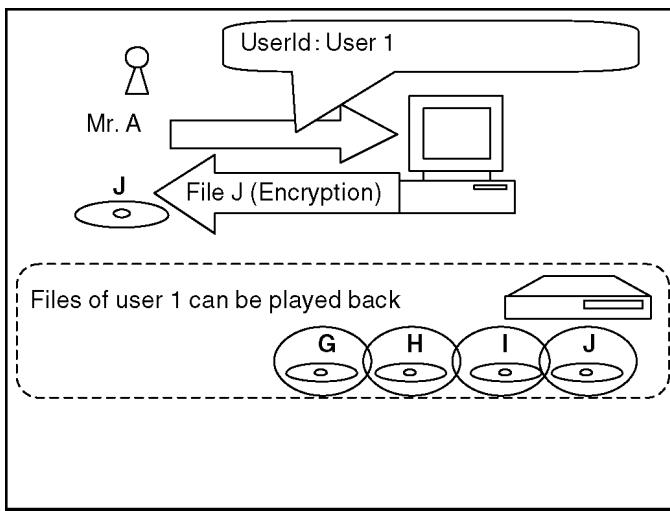
Your registration code is : DDDD-DDDD
To learn more visit www.divx.com/vod
[Done]

The code different from code before Activation is displayed.

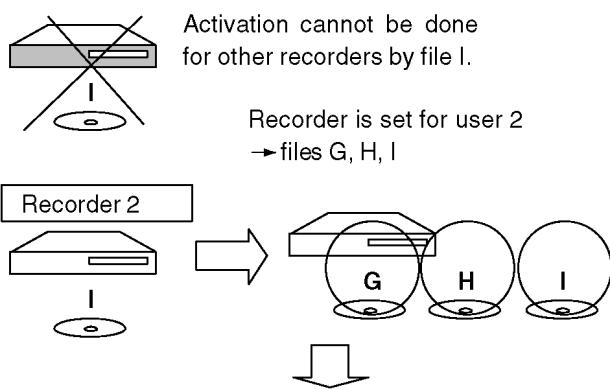
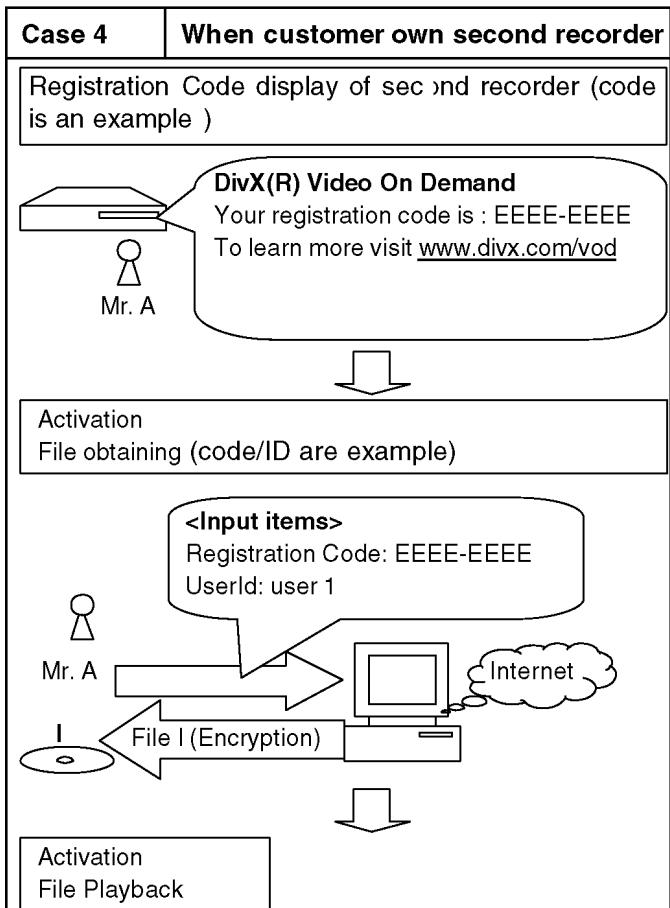
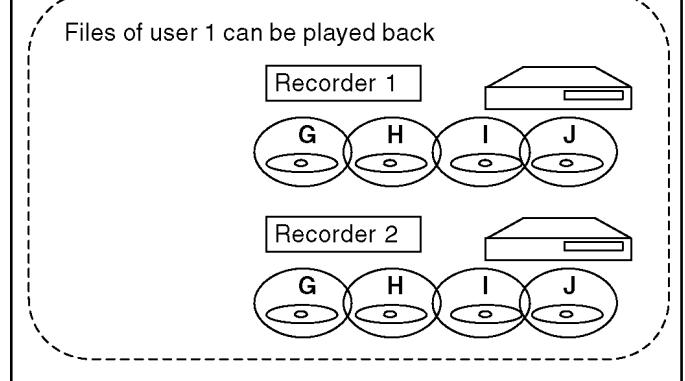
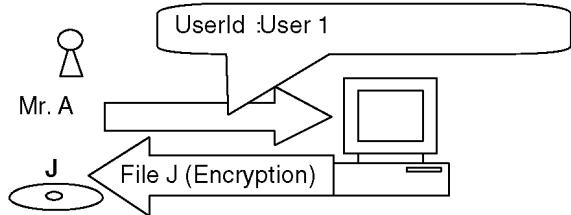
(This code is unnecessary for Mr. A)



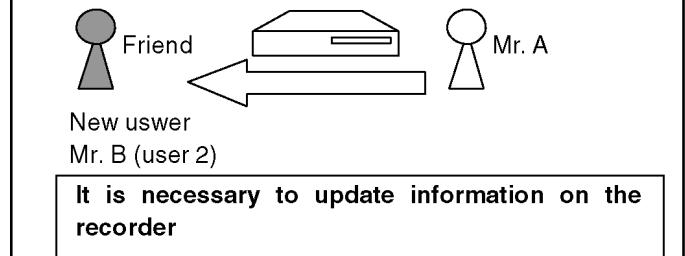
Obtainment /Playback of additional file after Activation (code/ID is an example)



Obtainment /Playback of additional file after Activation
(code/ID is an example)

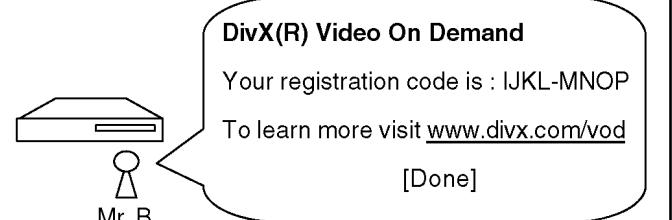


Case 5 When owner of recorder was changed to another.

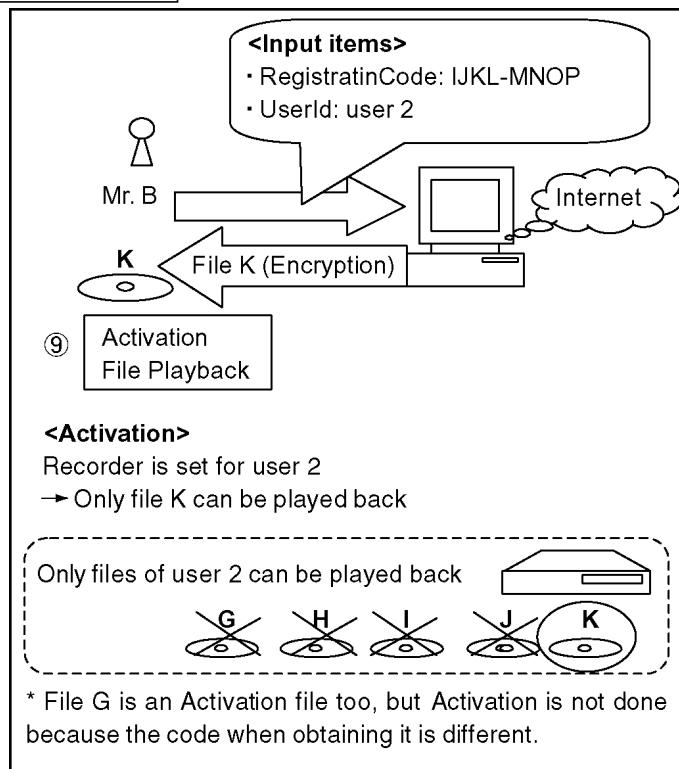


⑦ Activation

Registration Code is displayed



⑧ Activation
File obtaining (code/ID are example)



File kind

(There are two kinds of Activation files as follows too.)

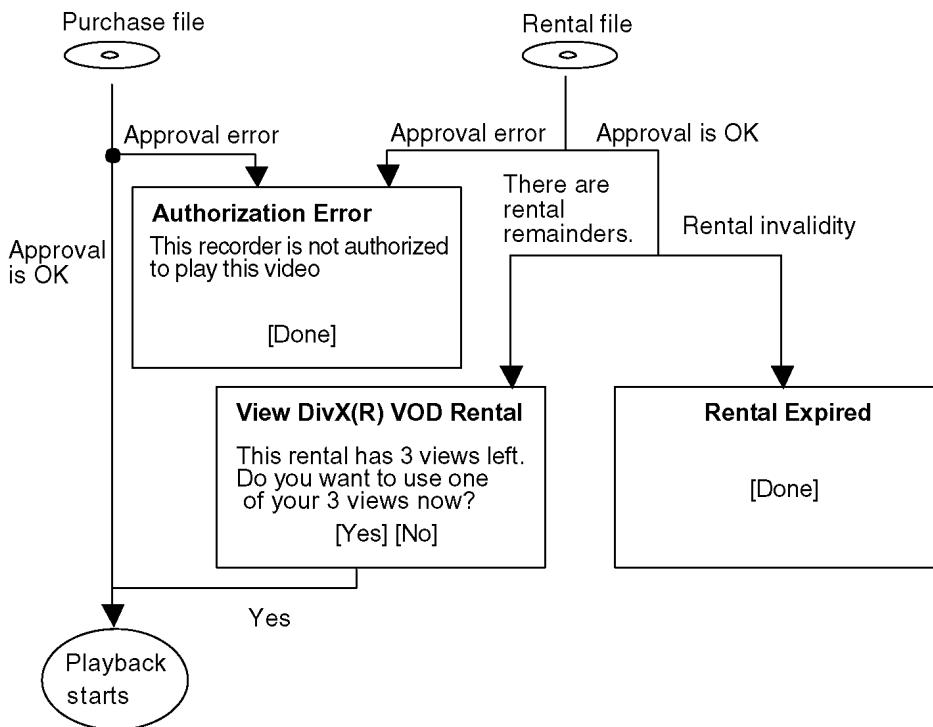
- Rental : There is a playback limitation
- Purchase : Unrestricted

Also there is next file as DRM files besides the above-mentioned.

Base: It is not necessary to approve though the contents is being encoded. → If it is recorder/player for DRM, any can play back.
(It is the same as usual DivX file when seeing from user.)

Screen shift (Error display)

Whether approval is OK or not: Whether the recorder is corresponding to User information on the file or not



5.1.3. About DivX DRM

Divx file includes file to which DRM(Digital Right Management) is applied and file not applied.

This item is a content that relates only in treating file to which DRM is applied.

1. Registration Code display function
2. User's registration and approval function
3. Rental management function

1) Registration Code display function

Registration Code is alphanumeric character sequence 8bytes inputted as recorder information, in case a user purchases or rents a DivX DRM file in a network.

Registration code is a character sequence generated at random, and differs in each recorder.

Moreover, Registration code is updated by new user authentication even if same recorder.

2) User's registration and approval function

- Only one user can register for one recorder. If user's registration is not done with the recorder, DivX file cannot be played back.
- User's registration is performed only when a DivX DRM file is first chosen by recorder
- DivX DRM file that can perform user's registration is only a file that is registered Registration Code and purchased or rented.
- User authentication is performed whenever DivX DRM file is played back.

Error message is displayed when failing in user's registration and approval.

3) Rental management function

There are purchase file without registration of number of playback and rental files with registration of number of playback as Divx file. Number of playback of rental file is counted by the recorder.

When rental file is played, remaining number of times that can be played back will be shown to users, recorder requests users to input yes or no.

Following specifications have been installed for the rental files in the purpose to clarify the count condition of number of times of playback.

- Conditions on counting number of times of play.
 1. When a file was opened successfully. (At the time of playback start)
 2. When you have done review operation from the start. (Skip to file head)
 - At this time, remaining number of times that can be played back and confirmation message [Do you play really?] are displayed.
 - When the playback point has been skipped to the top of title, number of playback is not counted if the top of title was not recognized.
 - Even if the power failure occurs after start of playback of rental file, number of times of playback counted at start of the playback is held as it is. (Though playback stops by power failure, the number of times of playback is not counted.)

When it has reached head of title, the playback is ended, and screen becomes DivX menu (There is no resume) and then cursor is located on title that has been played back.

Then if the same file was continuously played back, it begins to playback from the file head.

Note:

Above mentioned stored user information and number of times of playback are not erased by update of firmware or by initialization by test mode.

5.2. HDAVI Control (HDMI Link)

Linked operations by HDAVI Control (HDMI Link)

5.2.1. What is HDMI

HDMI is abbreviation of [High-Definition Multimedia Interface], and is digital interface standard for next generation TV corresponding to follows.

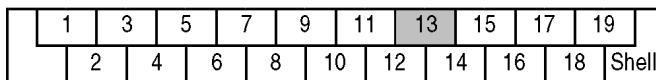
1. Non-compressing high quality digital image
2. Digital transmission of multi channel digital audio.
3. Two way communication of control signal of control straightening between equipments

Cable	Transmission method	Directionality	Transmission signal	Feature
HDMI Cable Digital (~4.455Gbps)	One-way	Digital image (non-compression high-definition television image)		Clock line in one system and data line in three systems can high-speed communicate high reliability because of balance communication that uses three respectively every one system. Moreover, because high-speed data line in three systems can be used at same time, it has ten of other digital cables times or more transmission ability.
		Digital Audio (6ch/24 bit high sound quality PCM of DVD audio/ Bit stream of surround to 8ch of DVD video)		And can transmit high-definition television image of non-compression, 24 bit high sound quality PCM voice of multi-CH of DVD audio (to 6ch) and Bit stream signal of surround to 8ch of DVD video (5.1ch, 6.1ch, and 7.1ch, etc.) as a digital signal of no deterioration.
	Interactive	Digital control signal (Advanced control between equipments)		It has power supply line and a interactive control signal line communication independent of AV signal, aCd can an advanced control between equipments. Therefore it can correspond to making of AV equipment in the future highly a network

Pin Name

No	Pin Name
1	TMDS Data2(+)
2	TMDS Data2(shield)
3	TMDS Data1(-)
4	TMDS Data1(+)
5	TMDS Data1(shield)
6	TMDS Data2(-)
7	TMDS Data0(+)
8	TMDS Data0(shield)
9	TMDS Data0(-)
10	TMDS Clock(+)
11	TMDS Clock(shield)
12	TMDS Clock(-)
13	CEC (Linked operation control)
14	NC
15	SCL
16	SDA
17	Ground
18	+5v Power
19	Hot Plug Detect

Pin layout of plug of HDMI cable seen from outside.



5.2.2. Link functions

Functions
(1) Automatic Input switch
(2) Link of Power

In case setting of [FUNCTIONS] → [Setup] → [TV Screen] → [Functions of HDMI] → [Control with HDMI] are on, all above equipments Link functions are effective.

5.2.3. Outline of Equipments Linked functions

(1) Automatic Input switch

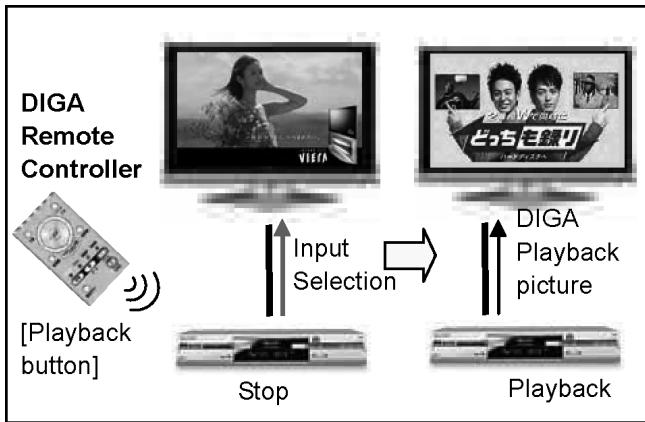
At starting of playback/ GUI display by DIGA, it turns on power of VIErA, and it displays picture of DIGA onto screen of VIErA.

Starting of playback:

It includes automatic playback of DVD-Video and so on. And it includes picture of screen saver too.

GUI display:

FUNCTIONS, DIRECT NAVIGATOR, TV PROGRAM, PROG/CHECK, Timer Recording, G-code, Initial setting, Playback setting, Play list, SD/DVD guide, Warning messages that user can select and so on.



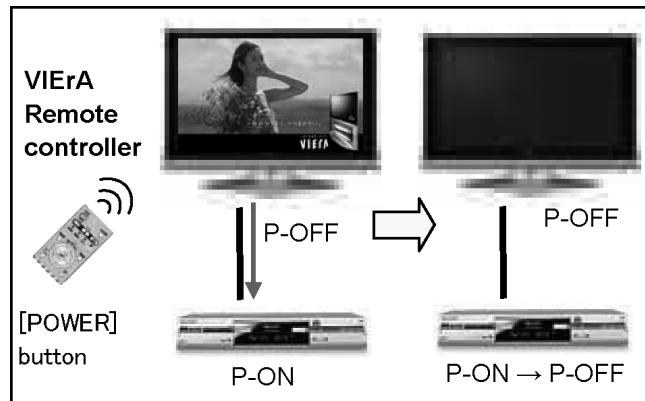
(2) Power Link

Power of DIGA is turned off linking to POWER OFF of VIerA.

- Power of DIGA is not turned on linking to POWER ON of VIerA.
- It is limited in following cases that DIGA links to POWER OFF of VIerA.
 1. During EE display (While Timer recording is being executed/ Functions is being displayed are included.)
 2. Case that DIGA is playing back (only North America/ Japan)

However except cases below.

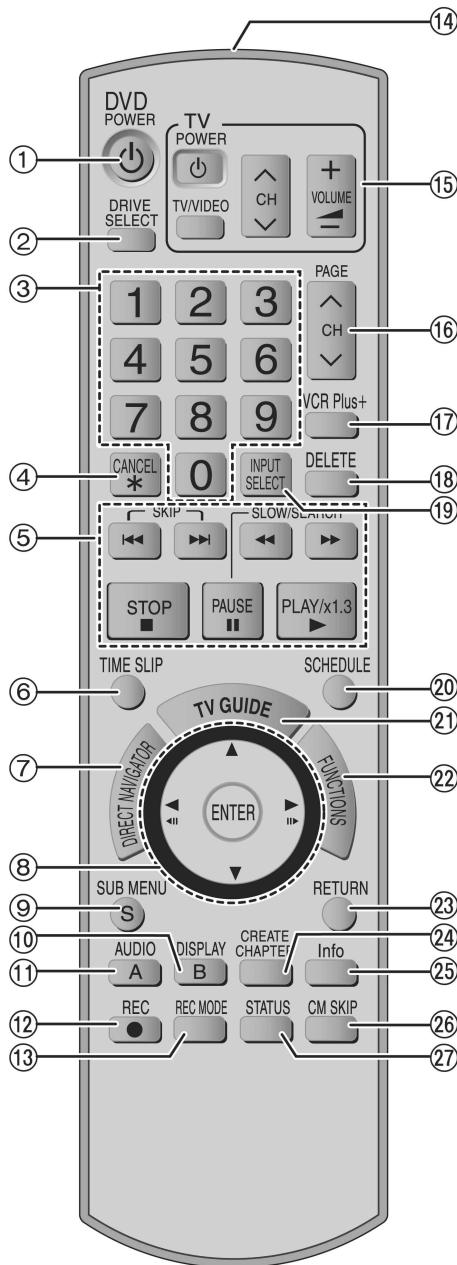
- During EE display, but manual recording is being executing/ during EXT_Link recording.
- During Tray is being opened.
- Case that DIGA is in status that power cannot turn off (during dubbing, during finalize).



6 Location of Controls and Components

Remote control

Instructions for operations are generally described using the remote control.



- ① Turn the unit on
- ② Select drive (HDD, DVD or SD)
- ③ Select channels and title numbers, etc./Enter numbers
- ④ Cancel
- ⑤ Basic operations for recording and play
- ⑥ Skip the specified time
- ⑦ Show Direct Navigator/Top menu
- ⑧ Selection/Enter, Frame-by-frame
- ⑨ Show sub menu
- ⑩ Show on-screen menu
- ⑪ "B" button for Direct Navigator
- ⑫ Select audio
- ⑬ "A" button for Direct Navigator
- ⑭ Start recording/Specify the time to stop recording
- ⑮ Change recording mode
- ⑯ Transmit the remote control signal
- ⑰ Television operations
- ⑱ Channel select/Change pages in the TV GUIDE system
- ⑲ Show VCR Plus+ screen
- ⑳ Delete items
- ㉑ Input select (IN1, IN2, IN3 or DV)
- ㉒ Show scheduled recording list
- ㉓ Show program listings (TV Guide On Screen™ system)
- ㉔ Show FUNCTIONS window
- ㉕ Return to previous screen
- ㉖ Create chapters
- ㉗ Changing the size of information window/Displays help information
- ㉘ Skip a minute forward
- ㉙ Show status messages

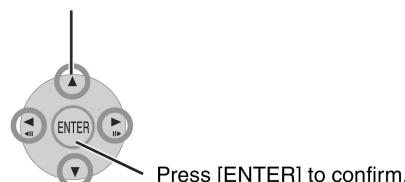
■ Using the cursor

•Select items on menu screens and set items.

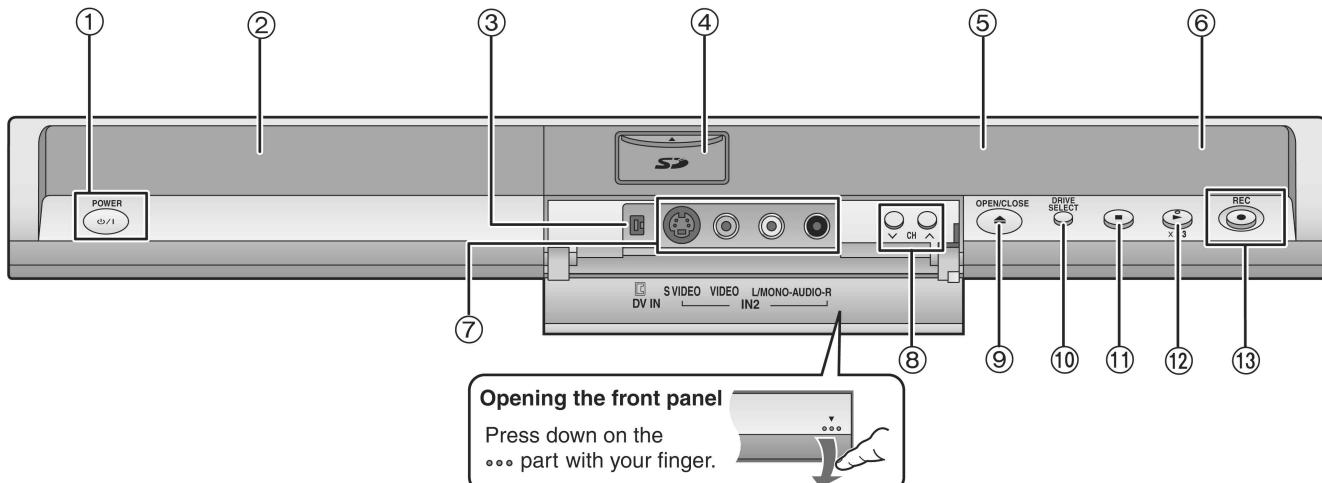
Press up, down, left, or right to select an item.

You can also move frame by frame (backward/forward).

While paused, press [$\blacktriangleleft\triangleright$] or [$\triangleright\blacktriangleright$] (left/right).



Main unit



① POWER button (POWER ⏻/I)

Press to switch the unit from on to standby mode or vice versa. In standby mode, the unit is still consuming a small amount of power.

② Disc tray (► below)

③ Connector for a digital video (DV) camcorder

④ SD card slot

⑤ Display (► below)

⑥ Remote control signal sensor

⑦ Connectors for external equipment

⑧ Channel select

⑨ Open/close disc tray

⑩ Select drive

Drive changes each time you press [DRIVE SELECT].

⑪ Stop

⑫ Start play

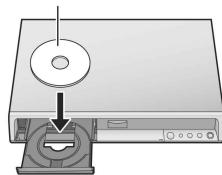
⑬ Start recording

Specify the time to stop recording

How to insert a disc

■ Non-cartridge disc

Insert label-up.



■ Cartridge disc



Press [**▲ OPEN/CLOSE**] on the main unit to open the tray and insert a disc. (Press the button again to close the tray.)

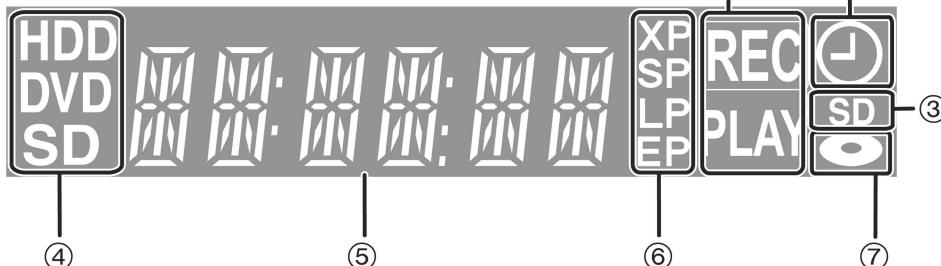
- When using 8 cm (3") DVD-RAM or 8 cm (3") DVD-R, remove the disc from the cartridge.
- It is not possible to record or play continuously from one side of a double sided disc to the other. You will need to eject the disc and turn it over.

Automatic drive select function

RAM [Only for discs with the write-protect tab on the cartridge set to "PROTECT" (Cartridge-protection)] **DVD-V DVD-A VCD CD**

- If the unit is stopped or recording to the HDD, it automatically switches to the DVD drive when a disc is inserted.
- If you eject a disc and close the disc tray, the HDD drive is automatically selected.

The unit's display



①

Recording



Playback



Recording/Playback



② Scheduled recording indicator

③ Lights up when an SD card is inserted in the SD card slot.

④ Lights up when the HDD, DVD or SD drive is selected.

⑤ Main display section

⑥ Recording mode

⑦ Lights up when a disc that is supported by this unit is inserted.

7 Operation Instructions

7.1. Taking out the Disc from DVD-Drive Unit when the Disc cannot be ejected by OPEN/CLOSE button

7.1.1. Forcible Disc Eject

7.1.1.1. When the power can be turned off.

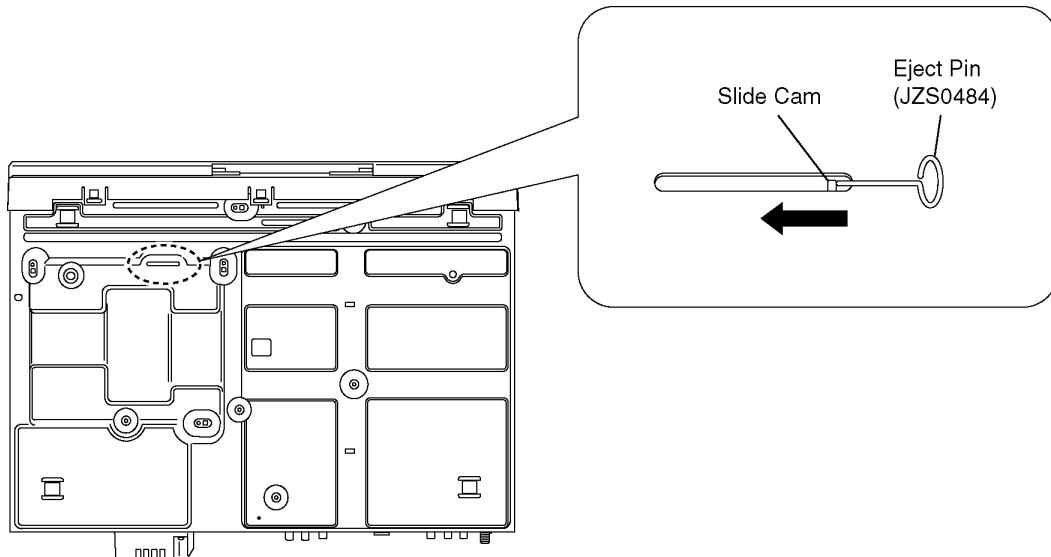
1. Turn off the power and press [STOP] [CH UP] keys on the front panel simultaneously for 5 seconds.

7.1.1.2. When the power can not be turned off.

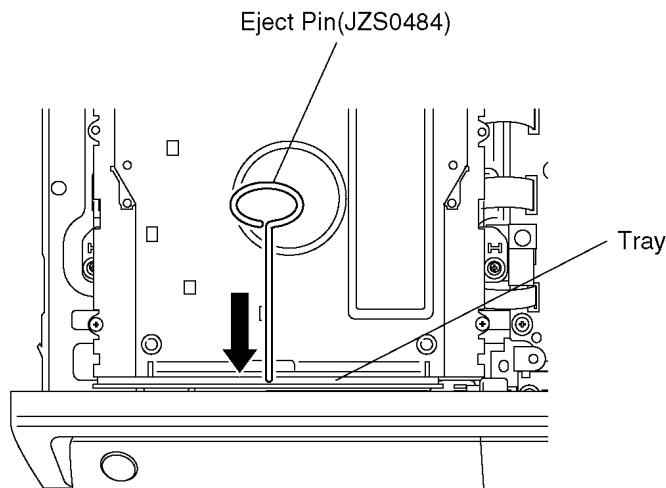
1. Press [POWER] key on the front panel for over 10 seconds to turn off the power forcibly, and press [STOP] [CH UP] keys on the front panel simultaneously for 5 seconds.

7.1.2. When the Forcible Disc Eject can not be done.

1. Turn off the power and pull out AC cord.
2. Remove the Top Case.
3. Put deck so that bottom can be seen.
4. Slide SLIDE CAM by Eject Pin (JZJ0484) or minus screw driver (small) in the direction of arrow to eject tray slightly.



5. Put deck upward, and push out Tray by Eject Pin (JZS0484) or minus screw driver (small).



8 Service Mode

8.1. Self-Diagnosis and Special Mode Setting

8.1.1. Self-Diagnosis Functions

Self-Diagnosis Function provides information for errors to service personnel by "Self-Diagnosis Display" when any error has occurred.

U, H** and F** are stored in memory and held.**

You can check latest error code by transmitting [0] [1] of Remote Controller in Service Mode.

Automatic Display on FL will be cancelled when the power is turned off or AC input is turned off during self-diagnosis display is ON.

Error Code	Diagnosis contents	Description	Monitor Display	Automatic FL display
U30	Remote control code error	Display appears when main unit and remote controller codes are not matched.	No display	<div style="border: 1px solid black; padding: 2px; display: inline-block;">SET *</div> ** is remote controller code of the main unit. Display for 5 seconds.
U59	Abnormal inner temperature detected	Display appears when the drive temperature exceeds 70°C. The power is turned off forcibly. For 30 minutes after this, all key entries are disabled. (Fan motor operates at the highest speed for the first 5 minutes. For the remaining 25 minutes, fan motor is also stopped.) The event is saved in memory as well.	No display	<div style="border: 1px solid black; padding: 2px; display: inline-block;">U59</div> "U59 is displayed for 30 minutes.
U61	The unit is carrying out its recovery process. (with no disc in the disc tray)	<ul style="list-style-type: none"> The unit detected an error while recording or playing with no disc in the disc tray. The unit is carrying out its recovery process. This process restores the unit to normal operation. The unit is not broken. Wait until the message disappears.	No display	<div style="border: 1px solid black; padding: 2px; display: inline-block;">U61</div>
U88	The unit is carrying out its recovery process. (with a disc in the disc tray)	<ul style="list-style-type: none"> The unit detected an error while recording or playing with a disc in the disc tray. The unit is carrying out its recovery process. This process restores the unit to normal operation. The unit is not broken. Wait until the message disappears.	No display	<div style="border: 1px solid black; padding: 2px; display: inline-block;">U88</div>
U99	Hang-up	Displayed when communication error has occurred between Main microprocessor and Timer microprocessor.	No display	<div style="border: 1px solid black; padding: 2px; display: inline-block;">U99</div> Displayed is left until the [POWER] key is pressed.
H19	Inoperative fan motor	When inoperative fan motor is detected after powered on, the power is turned off automatically. The event is saved in memory.	No display	No display
F00	No error information	Initial setting for error code in memory (Error code Initialization is possible with error code initialization and main unit initialization.)	No display	No display
F34	Initialization error when main microprocessor is started up for program recording	When initialization error is detected after starting up main microprocessor for program recording, the power is turned off automatically. The event is saved in memory.	No display	No display
F58	Drive hardware error	When drive unit error is detected, the event is saved in memory.	No display	No display
UNSUPPORT	Unsupported disc error	*An unsupported format disc was played, although the drive starts normally. *The data format is not supported, although the media type is supported. *Exceptionally in case of the disc is dirty.	"This disc is incompatible." <div style="border: 1px solid black; padding: 2px; display: inline-block;">UNSUP</div>  <div style="border: 1px solid black; padding: 2px; display: inline-block;">PORT</div>	<div style="border: 1px solid black; padding: 2px; display: inline-block;">Display for 5 seconds.</div>
NO READ	Disc read error	*A disc is flawed or dirty. *A poor quality failed to start. *The track information could not be read.	"Cannot read. Please check the disc."	<div style="border: 1px solid black; padding: 2px; display: inline-block;">NOREAD</div>

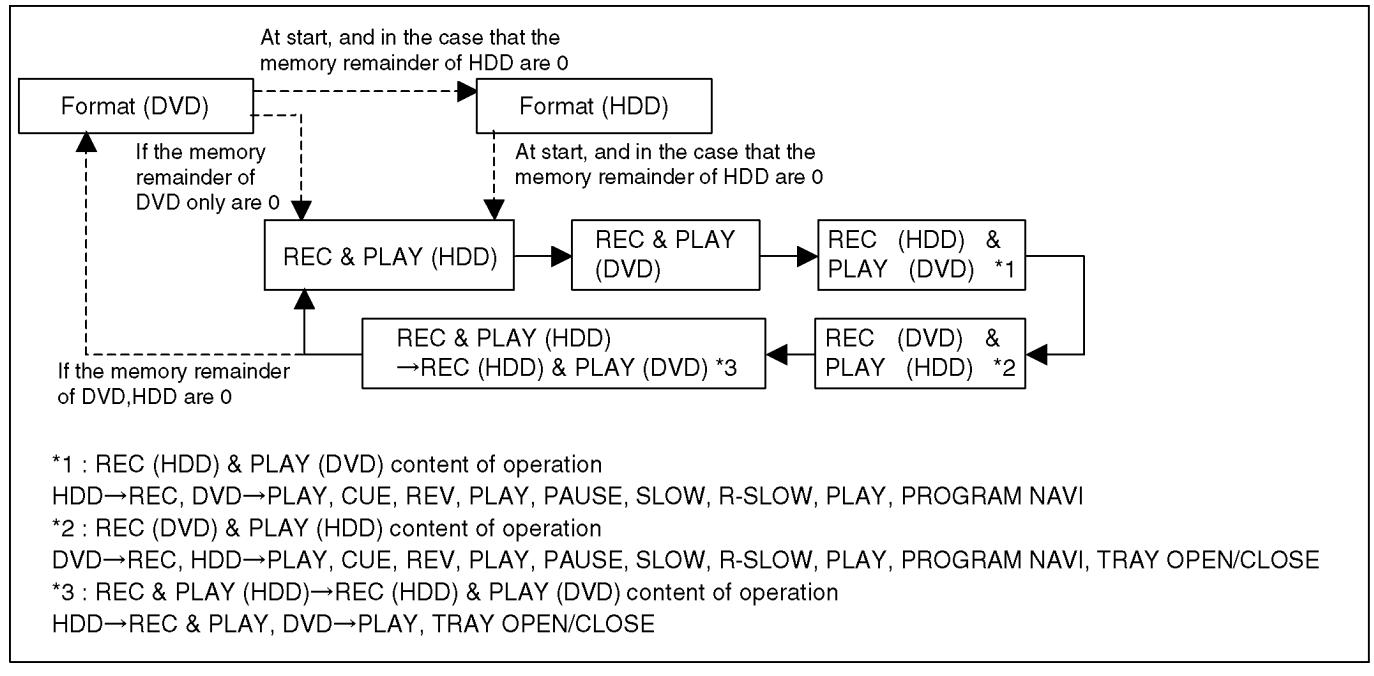
Error Code	Diagnosis contents	Description	Monitor Display	Automatic FL display
HARD ERR	Drive error	The drive detected a hard error.	"DVD drive error."	Display for 5 seconds. HARD ↓ ERR
IR ERR	IR communication error	[IR ERR] is displayed when communication between Timer microprocessor and IR microprocessor fails.	No display	IR ERR
No REC	Recording is impossible	[No REC] is displayed when recording is impossible due to the defect, dirt or wound of media.	No display	No REC
SELF CHECK	Restoration operation	Since the power cord fell out during a power failure or operation, it is under restoration operation. *It will OK, if a display disappears automatically. If a display does not disappear, there is the possibility that defective Digital P.C.B. / RAM drive.	No display	SELF ↓ CHECK
PLEASE WAIT	Unit is in termination process	Unit is in termination process now. "BYE" is displayed and power will be turned off. In case "Quick Start" of setup menu is ON, it is displayed in restoration operation for AC off.	No display	PLEASE ↓ WAIT
UNFORMAT	Unformatted disc error	You have inserted an unformatted DVD-RAM or DVD-RW that is unformatted or recorded on other equipment.	Format This disc is not formatted properly. Format the disc in DISK MANAGEMENT?	UNFOR ↓ MAT
HDD ERROR	[HDD ERR] is displayed when start up of HDD was failed. (Except error of setting of Power on Stand-by)	a) When normal start up was failed. b) When start up at HDD boot was failed. c) When start up from state of P-OFF was failed. d) When start up from state of HDD SLEEP was failed. [HDD ERR] is displayed when above each start up of HDD was failed. *In case b), tray opens automatically and [HDDERR] is displayed until version up disc is inserted.	No display	HDDERR
HDD NG	Power on Stand-by setting error	[HDD NG] is displayed when power on Stand-by setting of HDD is NG or when HDD which power on Stand-by is not set to is used. Please try to replace HDD with junine HDD as service parts.	No display	HDD NG

8.1.2. Special Modes Setting

Mode name	Item	FL display	Key operation
			Front Key
TEST Mode	*All the main unit's parameters (include tuner) are initialized.	TM L1	Press [STOP], [CH UP] and [OPEN/CLOSE] keys simultaneously for five seconds when power is off.
Rating password	The audiovisual level setting password is initialized to "Level 8".	INIT	Open the tray, and press [REC] and [PLAY] simultaneously for 5 seconds.
Service Mode	Setting every kind of modes for servicing. *Details are described in "8.1.3. Service Mode at a glance".	SERV	When the power is off, press [CH UP], [OPEN/CLOSE] and [REC] keys simultaneously for 5 seconds.

Mode name	Item	FL display	Key operation
			Front Key
Forced disc eject	<p>Removing a disc that cannot be ejected. The tray will open and unit will shift to P-off mode.</p> <p>*When Timer REC is ON or EXT-LINK is ON, execute "Forced disc eject" after releasing Timer REC or EXT-LINK.</p> <p>*This command is not effective during "Child lock" is ON.</p> <p>While Demonstration Lock is being set, this Forced disc eject function is not accepted.</p> <p>If this command was executed while TIMER REC is being set, TIMER REC setting will be kept.</p>	The display before execution leaves. *****	When the power is off, press [STOP] and [CH UP] keys simultaneously for 5 seconds.
Forced power-off	<p>When the power button is not effective while power is ON, turn off the power forcibly.</p> <p>*When Timer REC is ON or EXT-LINK is ON, execute "Forced Power-off" after releasing Timer REC or EXT-LINK.</p>	Display in P-off mode.	Press [POWER] key over than 10 seconds.
Aging	<p>Perform sequence of modes as * Aging Description shown below continually.</p> <p>Caution: All programs in DVD-RAM disc will be deleted because Formatting is done once in Aging process.</p>	Display following the then mode.	<p>When the power is ON, press [STOP], [POWER] and [OPEN/CLOSE] simultaneously for over 5 seconds and less than 10 seconds.</p> <p>NOTE1: If Unit has not turned into Aging mode by operations shown above, execute TEST MODE once and re-execute operation shown above. (*All the main unit's parameters include tuner are initialized by TEST mode.)</p> <p>NOTE2: If the unit has hung-up because of pressing keys for over 10 seconds, once turn off the power, and re-execute this command.</p> <p>*When releasing Aging mode, press [POWER] key.</p>

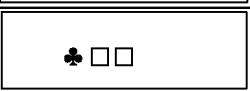
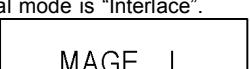
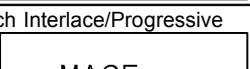
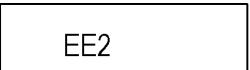
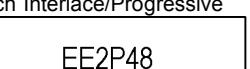
Aging Contents (Example):



Item		FL display	Key operation
Mode name	Description		
Demonstration lock/unlock	Ejection of the disc is prohibited. The lock setting is effective until unlocking the tray and not released by "Main unit initialization" of service mode.	*When lock the tray. 	When the power is on, press [STOP] and [POWER] keys simultaneously for 5 seconds. Note: When a disc is not in tray, this setting is not effective.
		*When unlock the tray. 	When the power is on, press [STOP] and [POWER] keys simultaneously for 5 seconds. "UNLOCK" is displayed for 3 seconds.
		*When press OPEN/CLOSE key while the tray being locked. 	Press [OPEN/CLOSE] key while the tray being locked. Display "LOCK" for 3 seconds.
ATP Initialization	ATP setting is initialized, and the unit turns off automatically.	It is same with display in stop mode. 	When the power is on (E-E mode), press [CH UP] and [CH DOWN] simultaneously for 5 seconds.
Progressive initialization	The progressive setting is initialized to Interlace.	The display before execution leaves. 	When the power is on (E-E mode), press [STOP] and [PLAY] simultaneously for 5 seconds.

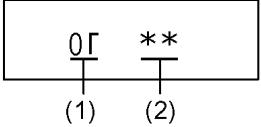
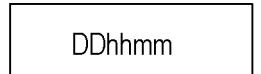
8.1.3. Service Modes at a glance

Service mode setting: While the power is off, press [REC], [CH UP] and [OPEN / CLOSE] simultaneously for five seconds.

Mode name	Item	FL display	Key operation
			(Remote controller key)
Release Items	Item of Service Mode executing is cancelled.	SERV	Press [0] [0] or [Return] in service mode.
Error Code Display	Last Error Code of U/H/F held by Timer is displayed on FL. *Details are described in "8.1.1. Self-Diagnosis Functions".	 *♣ shows U/H/F. □□ shows number. If any error history dose not exist, [F00] is displayed.	Press [0] [1] in service mode
ROM Version Display	1. Region code (displayed for 5 sec.) 2. Main firm version (displayed for 5 sec.) 3. Timer firm version (displayed for 5 sec.) 4. Drive firm version (displayed for 5 sec.) 5. ROM correction version (left displayed)	1. NO * 2. ***** 3. ***** 4. **** 5. ***	Press [0] [2] in service mode
White Picture Output	White picture is output as component Output from AV Decoder. *White picture (Saturation rate : 100%) *It is enable to switch Interlace/Progressive by "I/P switch: [1] [4]"	*Initial mode is "Interlace".  Switch Interlace/Progressive 	Press [1] [1] in service mode.
Magenta Picture Output	Magenta picture is output with Component Output from AV Decoder. *Magenta picture (Saturation rate: 100%) *It is enable to switch Interlace/Progressive by "I/P switch: [1] [4]"	*Initial mode is "Interlace".  Switch Interlace/Progressive 	Press [1] [2] in service mode.
RTSC Return in XP (A & V)	L1 input signal is encoded (XP), decoded (XP) and output decoded signal to external without DISC recording and DISC playback.	Initial mode: EE2/ Interlace/ XP/ Audio 48kHz  Switch Interlace/Progressive  Audio 44.1 kHz/ 48 kHz Switch 	Press [1] [3] in service mode.
			Press [1] [4] in RTSC Return XP mode. *I/P are switched alternately.
			Press [2] [4] in RTSC Return XP mode. *48 kHz / 44.1 kHz are switched alternately.

Item		FL display	Key operation (Remote controller key)
Mode name	Description		
I/P Switch	Switch Interlace and Progressive in EE mode. *Initial setting is "Interlace". *This command is effective during executing "White Picture Output", "Magenta Picture Output" and "RTSC Return in XP (A & V)" modes.	Initial mode is Interlace Switch Interlace/Progressive 	Press [1] [4] in I/P Switch mode. *I/P are switched alternately.
Audio Mute (XTMUTE)	Check whether mute is applied normally by the timer microprocessor.		Press [2] [1] in service mode.
Audio Mute (XDMUTE)	Check whether mute is applied normally by the Digital P.C.B..		Press [2] [2] in service mode.
Audio Pattern Output	The audio pattern stored in the internal memory is output (Lch: 1kHz/-18dB) (Rch: 400Hz/-18dB) *Audio sound clock switching operation of DAC can be confirmed by sub command [2] [4].	Initial mode (Audio 48kHz) Audio 44.1kHz/48kHz switching 	Press [2] [3] in service mode. Press [2] [4] in Audio Pattern Output mode. *48 kHz / 44.1 kHz are switched alternately.
HDD READ inspection	Perform a complete read inspection of the HDD.	When the HDD is OK If the HDD is defective □ :Judge of Forward rate. *When normal (Forward rate is 35Mbps or more, and there is no HDD error):□ is Space. *When Abnormal (Forward rate is less than 35Mbps or HDD error existing):□ is X. ○○ :Number of what have spent time for seeking is over 100ms. *When normal:○○ are spaces. *When Abnormal: Display Number of what have spent time for seeking over 100ms. However, if the number is more than 100, display [XX]. We judge it is normal that the number is less than 4.	Press [3] [1] in service mode. *When canceling the checking mode while executing, do "forced power-off". Method: Press the "POWER" button more than 10 seconds.
Laser Used Time Indiction	Check laser used time (hours) of drive.	 ●(*****) is the used time display in hour. ●Laser used time of DVD/ CD in Playback/Recording mode is counted.	Press [4] [1] in service mode.
Delete the Laser Used Time	Laser used time stored in the memory of the unit is deleted.		Press [9] [5] in service mode.

Mode name	Item	FL display	Key operation															
			(Remote controller key)															
RAM Drive Last Error	RAM Drive error code display. *For details about the drive error code, refer to the Service Manual for the specific RAM Drive.	<p>1. Error Number is displayed for 5 seconds.</p> <div style="border: 1px solid black; padding: 5px; text-align: center;">NO **</div> <p>2. Time when the error has occurred is displayed for 5 seconds.</p> <div style="border: 1px solid black; padding: 5px; text-align: center;">DDhhmm</div> <p>DD: Day hh: Hour mm: Minute</p> <p>3. Last Drive Error (1/2) is displayed for 5 seconds.</p> <div style="border: 1px solid black; padding: 5px; text-align: center;">*****</div> <p>4. Last Drive Error (2/2) is displayed for 5 seconds.</p> <div style="border: 1px solid black; padding: 5px; text-align: center;">*****</div> <p>5. Error occurring Disc type is displayed for 5 seconds.</p> <div style="border: 1px solid black; padding: 5px; text-align: center;">*****</div> <p>6. Disc Maker ID is displayed for 5 seconds.</p> <div style="border: 1px solid black; padding: 5px; text-align: center;">*****</div> <p>7. Factor of Drive Error occurring is left displayed</p> <div style="border: 1px solid black; padding: 5px; text-align: center;">*****</div>	Press [4] [2] in service mode. When "INFO*****" is being displayed, past 19 error histories can be displayed by pressing [0] [1] - [1] [9]															
Delete the Last Drive Error	Delete the Last Drive Error information stored on the DVD RAM-Drive.	CLR	Press [9] [6] in service mode.															
Laser power confirmation	Drive state is judged based on difference between laser power value at shipping and present laser power value.	<div style="border: 1px solid black; padding: 5px; text-align: center;">CHK *</div> <p>* is judgment result</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <th>*</th> <th>Power value difference</th> <th>Evaluation</th> </tr> <tr> <td>0</td> <td>1mW or less</td> <td>Very good.</td> </tr> <tr> <td>1</td> <td>2mW or less</td> <td>Good.</td> </tr> <tr> <td>2</td> <td>3mW or less</td> <td>Bad.</td> </tr> <tr> <td>3</td> <td>4mW or more</td> <td>Very bad.</td> </tr> </table> <p>If DVD-RAM disc is not inserted, [NO DISC] is displayed. If power value study was failed, [ERROR] is displayed.</p>	*	Power value difference	Evaluation	0	1mW or less	Very good.	1	2mW or less	Good.	2	3mW or less	Bad.	3	4mW or more	Very bad.	1. Insert DVD-RAM disc into RAM Drive in service mode. (Other media are assumed to be non-correspondence.) 2. Press [4] [4].
*	Power value difference	Evaluation																
0	1mW or less	Very good.																
1	2mW or less	Good.																
2	3mW or less	Bad.																
3	4mW or more	Very bad.																
Turn on all FL/LEDs	All segments of FL and all LEDs are turned on.	All segments are turned on.	Press [5] [1] in service mode.															
S1 signal output	Forcibly superimpose the S1 signal (approx. 4.5V DC) on the EE chroma signal, and check the output on the S terminal.	S1 OUT	Press [5] [2] in service mode.															
S2 signal output	Forcibly superimpose the S2 signal (approx. 2V DC) on the EE chroma signal, and check the output on the S terminal.	S2 OUT	Press [5] [3] in service mode.															

Item		FL display	Key operation (Remote controller key)
Mode name	Description		
Front connection inspection	Press all front keys and check the connection between Main P.C.B. and Front key Switches.	 <p>(1) Each time a key is pressed, segment turned on increases one by one. (2) Total umber of keys that have been pressed.</p>	Press [5] [4] in service mode.
Production Date Display	Display the date when the unit was produced.	 <p>YY: Year MM: Month DD: Day</p>	Press [6] [1] in service mode.
Display the accumulated working time	Display the accumulated unit's working time.	 <p>(Indicating unit: Second)</p>	Press [6] [4] in service mode.
Display the Error History	Display the Error History stored on the unit.	<p>Display reason of error for 5 seconds.</p>  <p>01: Defect of Digital P.C.B. (AV DEC / MAIN CPU) 02: Defect of RAM Drive. 03: Defect of Disc. 04: Defect of Digital P.C.B. or Communication Error. 05: Defect of Digital P.C.B. (AV DEC / MAIN CPU)</p> <p>Display the time when the error has occurred for 5 seconds.</p>  <p>DD: Day hh: Hour mm: Minute Accumulated working time till occurring of the error is left displayed.</p>  <p>(Indicating unit: Second)</p>	Press [6] [5] in service mode. Then press [0] [1] ~ [1] [9], the past 19 error histories are displayed.
Delete the Error History	Delete Error History information stored on the unit.		Press [9] [7] in service mode.
SD card WRITE check	Delete Error History information stored on the unit.	<p>When the WRITE check is OK.</p>  <p>When the WRITE check is NG.</p>  <p>*Note: The image stored in the SD card will be erased.</p>	Insert a SD card to SD card slot, and press [7] [4] in service mode. *Insert SD card while the power is off. *Check for [CARD SD] display on the FL display and go on the procedure.

Item		FL display	Key operation
Mode name	Description		(Remote controller key)
Tray OPEN/CLOSE Test	The RAM drive tray is opened and closed repeatedly.	***** “*” is number of open/close cycle times.	Press [9] [1] in service mode *When releasing this mode, press the [POWER] button of Remote Controller more than 10 seconds.
Error code initialization	Initialization of the last error code held by timer (Write in F00)	CLR	Press [9] [8] in service mode.
Initialize Service	Last Drive Error, Error history and Error Codes stored on the unit are initialized to factory setting.	CLR	Press [9] [9] in service mode.
Finishing service mode	Release Service Mode.	Display in STOP (E-E) mode. *****	Press power button on the front panel or Remote controller in service mode.

9 Service Fixture & Tools

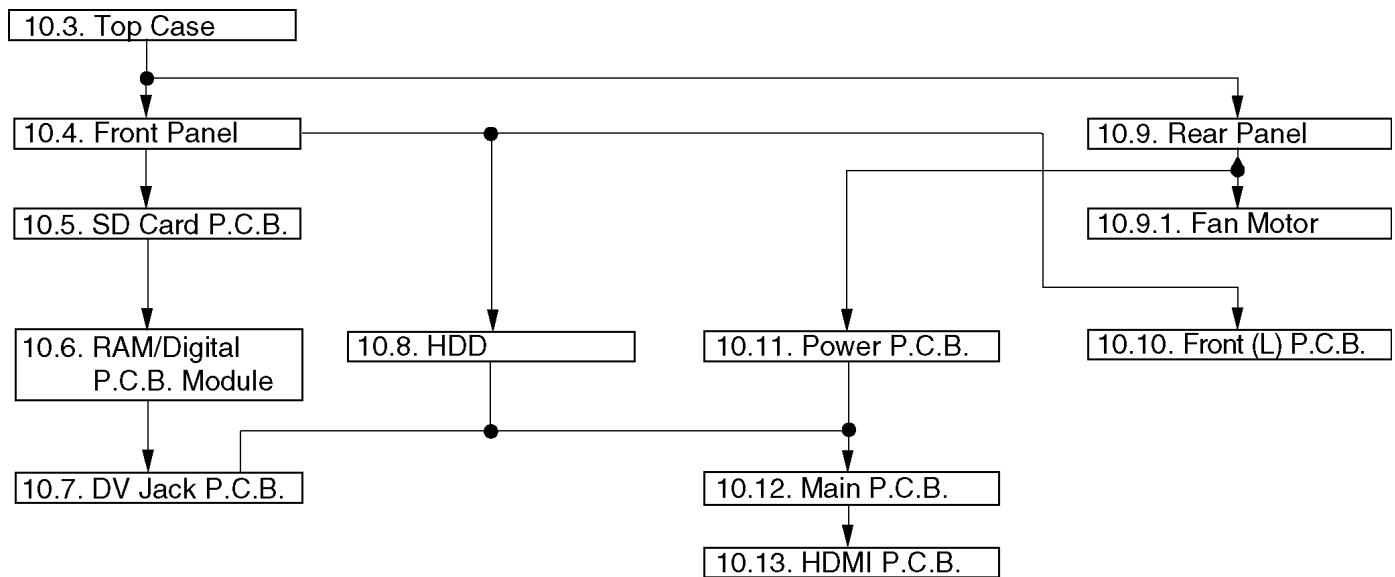
Part Number	Description	Compatibility
RFKZ0260	Extension Cable (MainP.C.B. - RAM/Digital P.C.B. Module/ 88 Pin)	Same as ES10 Series
RFKZ0216	Extension Cable (MainP.C.B. - Power P.C.B./ 23 Pin)	Same as ES10 Series
RFKZ0366	Extension FFC (HDD - RAM/Digital P.C.B. Module/ 40 Pin)	New
RFKZ0168	Extension Cable (Power P.C.B. - Fan Motor/ 3 Pin)	Same as E50/ ES30V/ ES40V Series
RFKZ0339	Extension Cable (MainP.C.B. - HDD / 4 Pin)	Same as EH75V Series
JZS0484	Eject Pin	Same as ES15/ E50 Series
RFKZ03D01K	Lead Free Solder (0.3mm/100g Reel)	Same as ES15 Series
RFKZ06D01K	Lead Free Solder (0.6mm/100g Reel)	Same as ES15 Series
RFKZ10D01K	Lead Free Solder (1.0mm/100g Reel))	Same as ES15 Series
RFKZ0316	Solder Remover (Lead free 10W temperature Solder/180g)	Same as ES15 Series
RFKZ0328	Flux	Same as ES15 Series
RFKZ0329	Bottle of Flux	Same as ES15 Series

10 Disassembly and Assembly Instructions

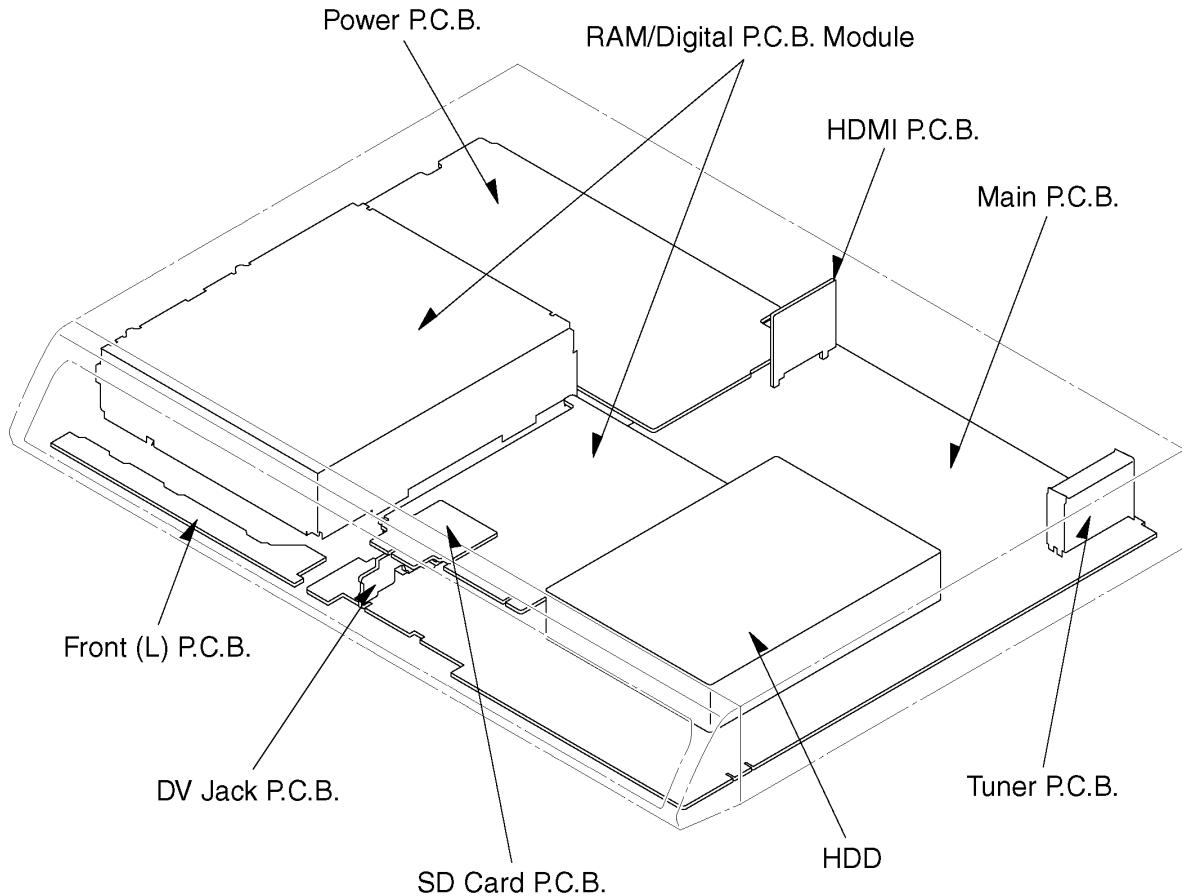
10.1. Disassembly Flow Chart

The following chart is the procedure for disassembling the casing and inside parts for internal inspection when carrying out the servicing.

To assemble the unit, reverse the steps shown in the chart below.

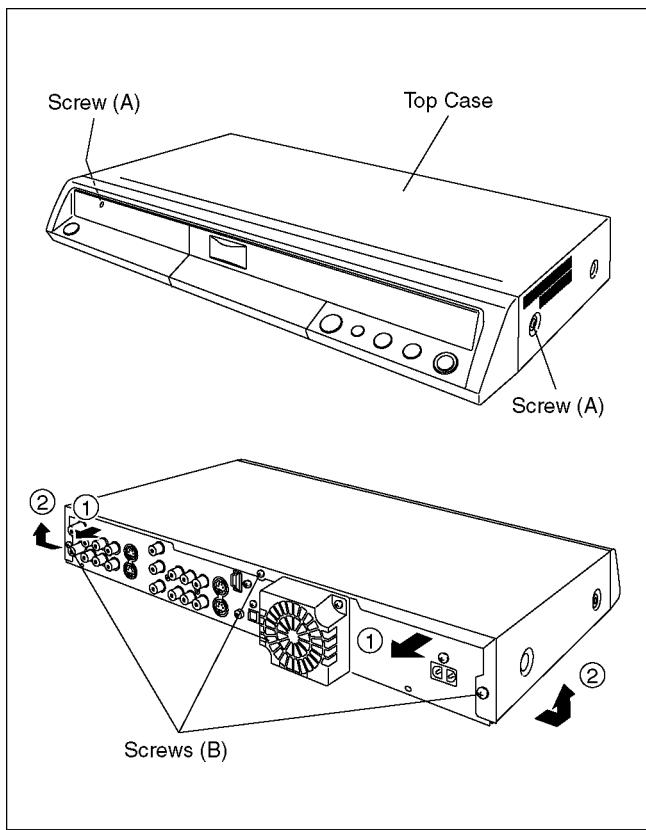


10.2. P.C.B. Positions



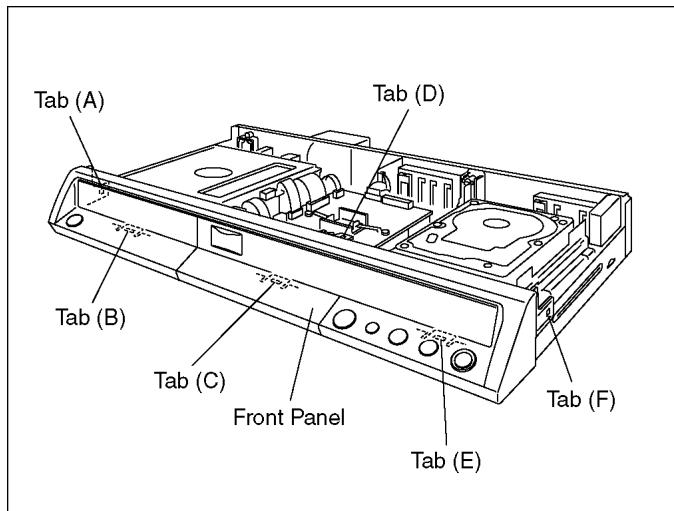
10.3. Top Case

1. Remove 2 screws (A) and 3 screws (B).
2. Slide Top Case rearward and open the both ends at rear side of the Top Case a little and lift the Top Case in the direction of the arrows.



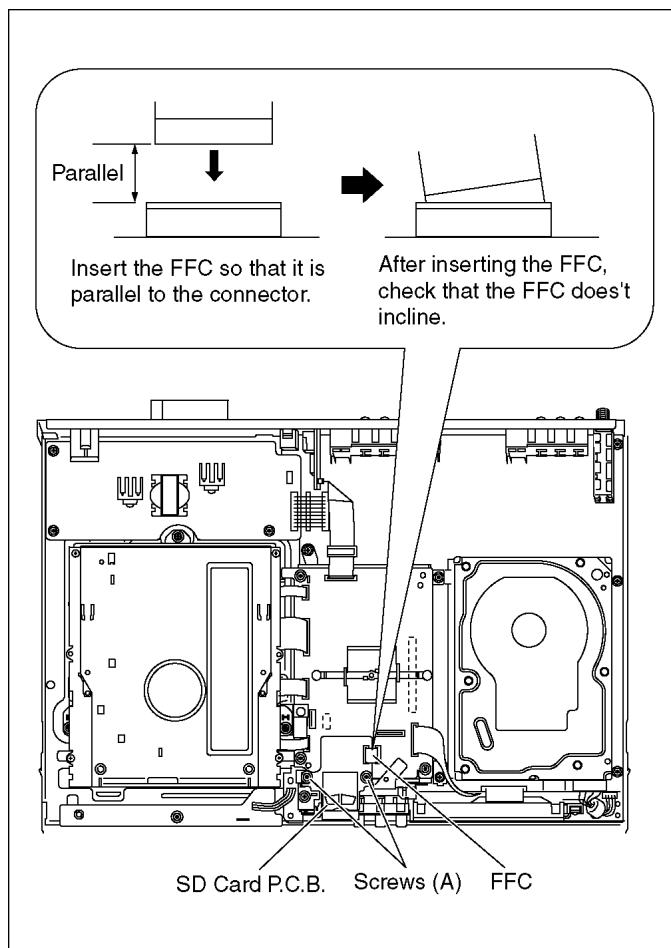
10.4. Front Panel

1. Unlock 6 tabs in (A) - (F) turn.
Pull with the front panel in the direction of your side.



10.5. SD Card P.C.B.

1. Remove 1 FFC and 2 screws (A) to remove SD Card P.C.B..



10.6. RAM/Digital P.C.B. Module

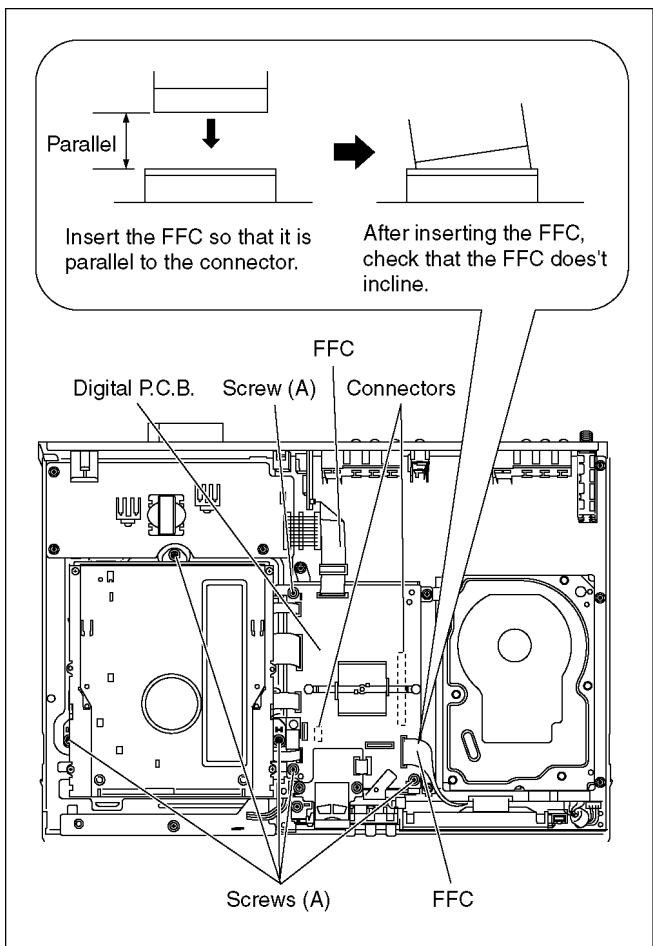
Caution:

Pairing of RAM Drive and Digital P.C.B. as "RAM/Digital P.C.B. Module" have to be replaced together. If the pairing is changed, RAM Drive unit has to be re-aligned. Because the alignment data for RAM Drive Unit is stored in Digital P.C.B..

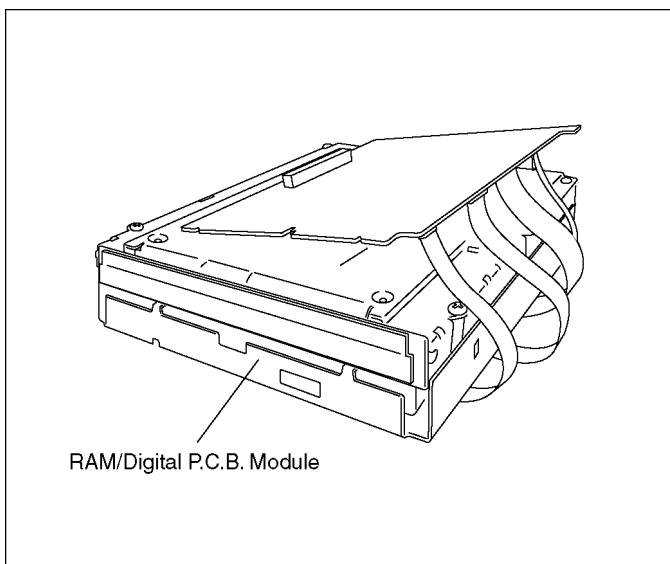
Note:

After replacing RAM/Digital P.C.B. Module, "TM L1" is displayed on FL.
Once power off, and start-up again.

1. Remove 2 FFCs and 6 Screws (A).
2. Lift up Digital P.C.B. slightly so to disconnect Connectors to remove Digital P.C.B.



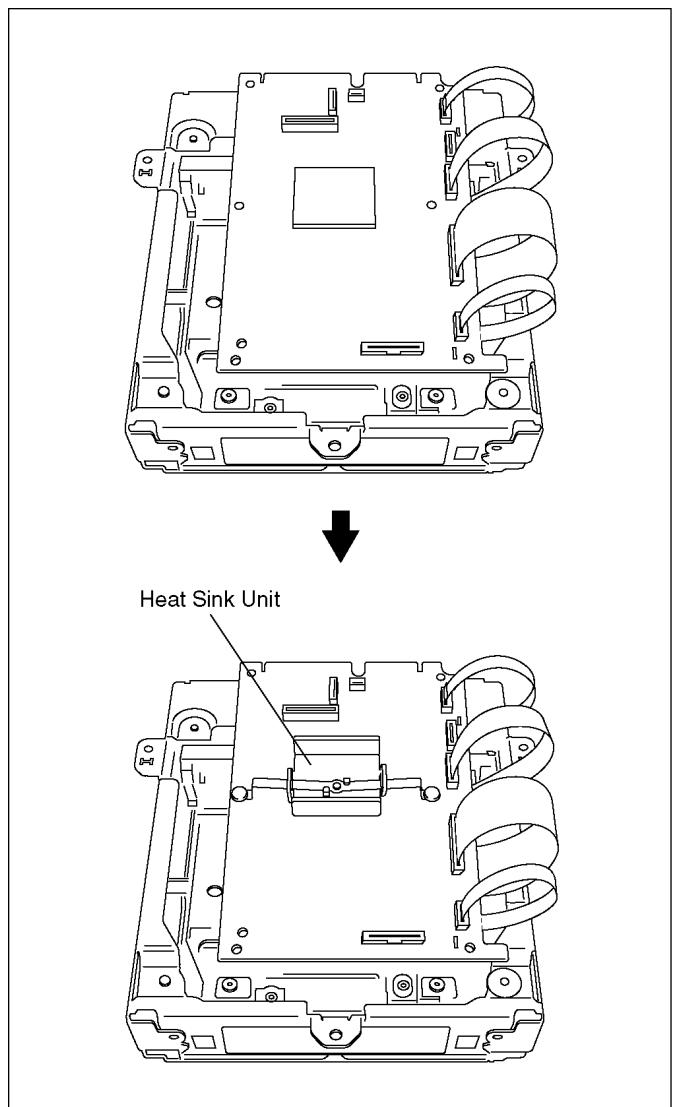
3. Put Digital P.C.B. on RAM Drive and remove RAM/Digital P.C.B. Module.



Note:

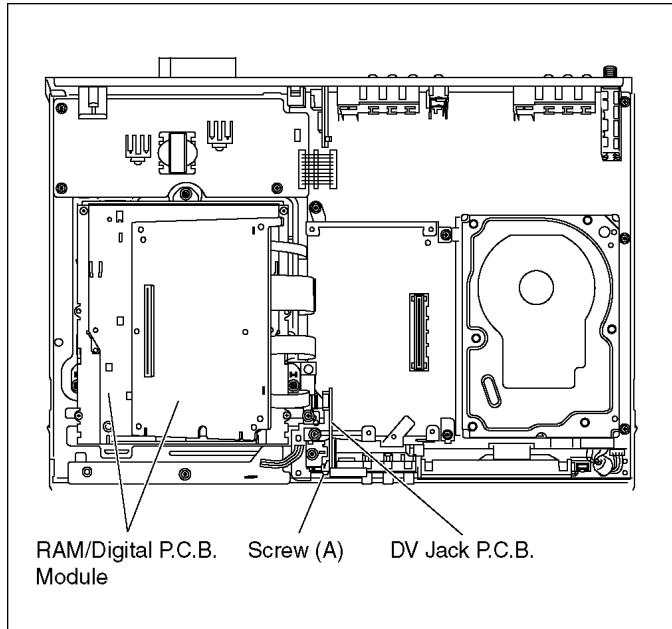
RAM/Digital P.C.B. Module as service part has no heat sink unit.

Before returning to customer, heat sink unit should be installed on Digital P.C.B..



10.7. DV Jack P.C.B.

1. Remove 1 Screw (A) to remove DV Jack P.C.B.



10.8. HDD

Caution:

Writing the main firmware to the unit is necessary after replacing the HDD.
Prepare the latest firmware updating disc.

* The main firmware is recorded in the HDD, but the replacement HDD has no data (and needs to be formatted).

Writing Procedure of Main Firm:

Caution:

- (1) Writing of Main Firm needs 3, 4 minutes.
- (2) Never cut the power of DVD Recorder until writing in Firmware ends.
- (3) Initial settings and contents of reservation will not change if writing is normally completed.

1. Prepare latest firmware updating disc.
2. Replace HDD.
3. Turn on power of DVD Recorder.
4. After [PLEASE WAIT] is displayed on FL., [HDD ERR] is displayed on FL.
5. Tray opens automatically.
6. Insert updating disc for Firmware and press OPEN/CLOSE key.
(If a wrong disc was inserted, [NG DISK] [NO FVU] is displayed on FL.)
7. [LOAD] → [LD FVU] ↔ [M_FIRM] are displayed on FL alternately.
8. [MAIN] ↔ [UPD OK] blink alternately and Tray opens.
Take out disc (Writing was finished).
9. Press Power button to turn off power.
10. Press Power button to turn on power.
11. [HELLO] → [SELF CHECK] are displayed on FL.
12. [UNFORMAT] is displayed on FL.
13. After [UNFORMAT] was displayed, message to request FORMAT is displayed on TV screen.
14. Select [Yes] and press [ENTER] key to format HDD.
(After FORMAT, program in HDD will be lost, but Main firm will not be lost.)

"Write of the main firm" is completed above.

* Drive firm is not updated by above operation. If you wish update Drive firm, please prepare the disc for latest firmware update, and write it again.

* If the version of the firm you have prepared was same as or later than that has already been written in deck, 'UNSUPPORT' is displayed on FL.

* In a usual updating of firmware, writing is not performed when the timer reservation standby was not released.

Handling of HDD

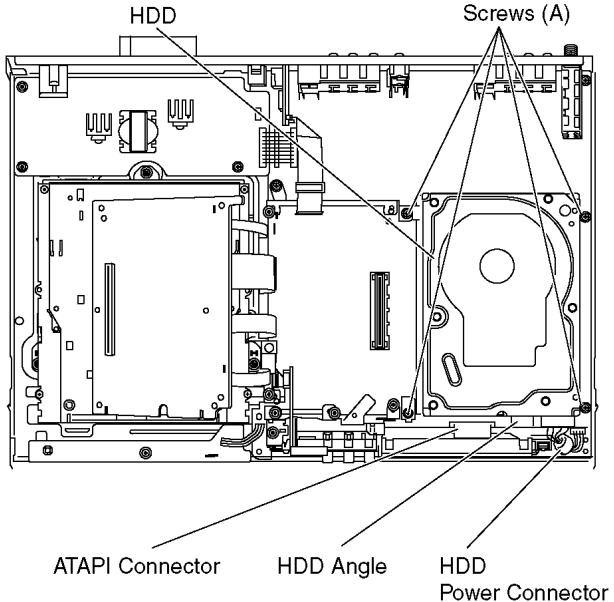
The following precautions should be taken when handling HDD.

- a. Never give an impact to HDD. (Even a drop from 1cm height can be a cause of HDD failure.)
- b. When placing HDD on a workbench, provide a mat on a bench for shock absorption and anti-static purposes.
- c. When installing HDD, release it from your hands only after confirming that it is fully set on the chassis.
- d. Avoid stacking up HDD.
- e. HDD is unstable and easy to fall. Do not stand it on its side face.
- f. When handling HDD, hold its side faces to avoid static hazard.
- g. Do not place HDD on its wrapping bag after removal. (Prevention of static hazard)
- h. Use a screwdriver with low impact and anti-static features.

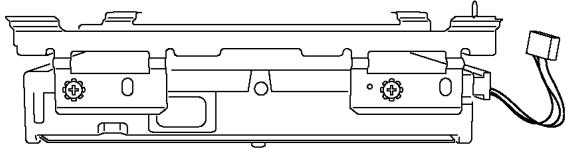
Note:

When replacing HDD, please make the rear jumper slave or cable select configuration.

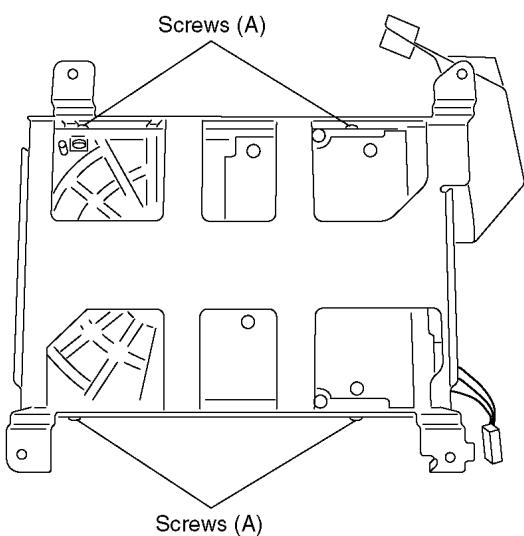
1. Remove ATAPI Connector and HDD Power Connector.
2. Remove 4 Screws (A) to remove HDD Angle with HDD.



3. Put HDD with HDD Angle up and down inversely so as not to give a shock to HDD.

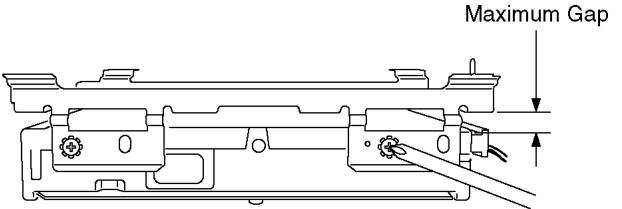


4. Remove 4 screws (A) remove HDD.



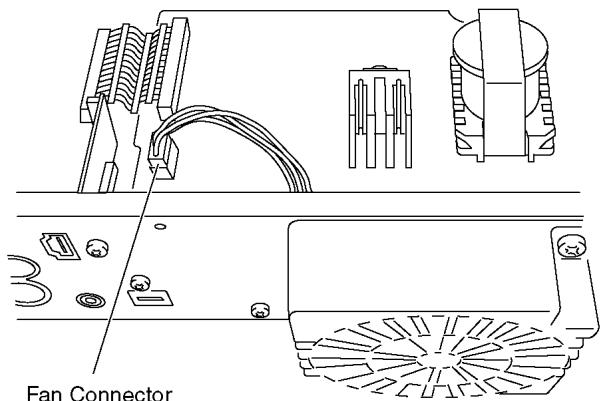
Caution for Attaching HDD

Put HDD up and down inversely so as not to give a shock to HDD, and put HDD Angle on to HDD and tighten 4 screws while lifting HDD Angle so as to keep maximum gap between HDD and HDD Angle.

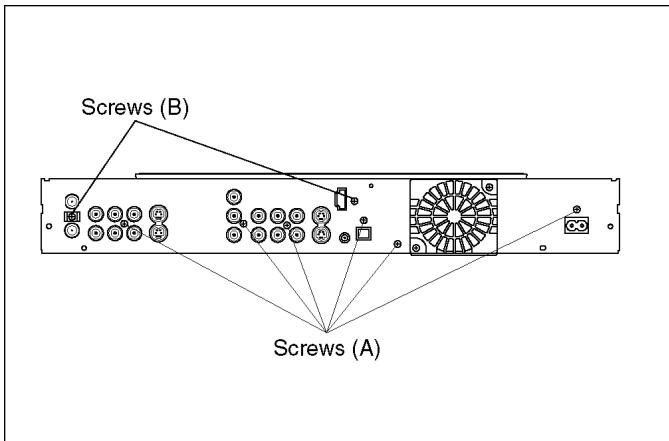


10.9. Rear Panel

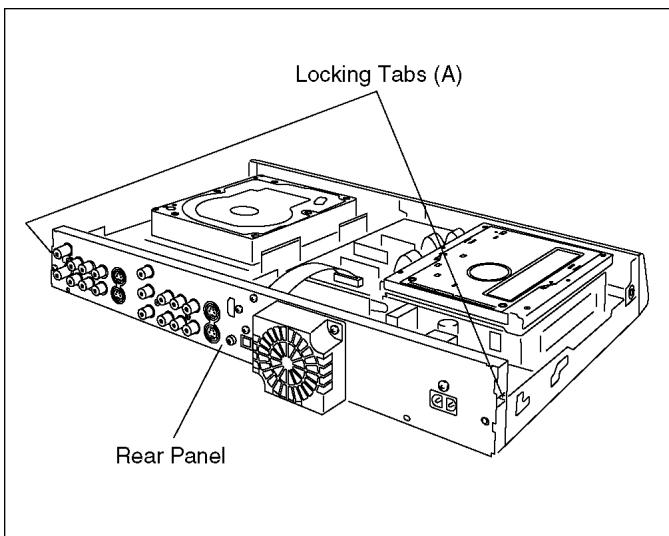
1. Disconnect Fan Connector.



2. Remove 6 Screws (A) and 2 Screws (B).

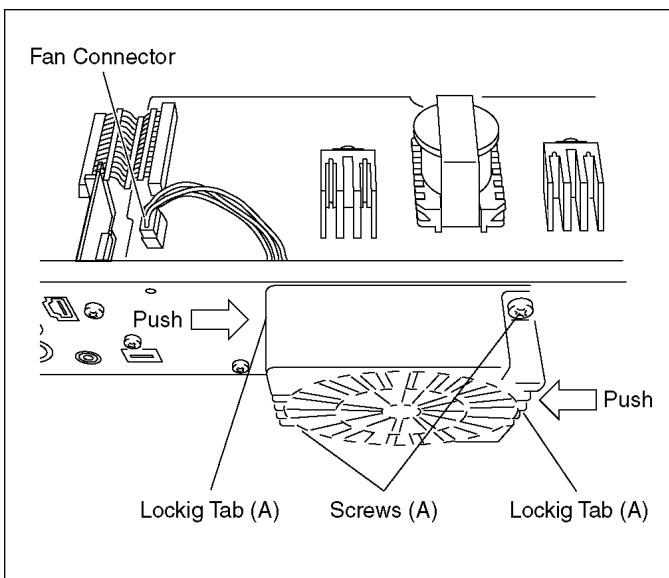


3. Unlock 2 Locking Tabs (A) to remove Rear Panel.



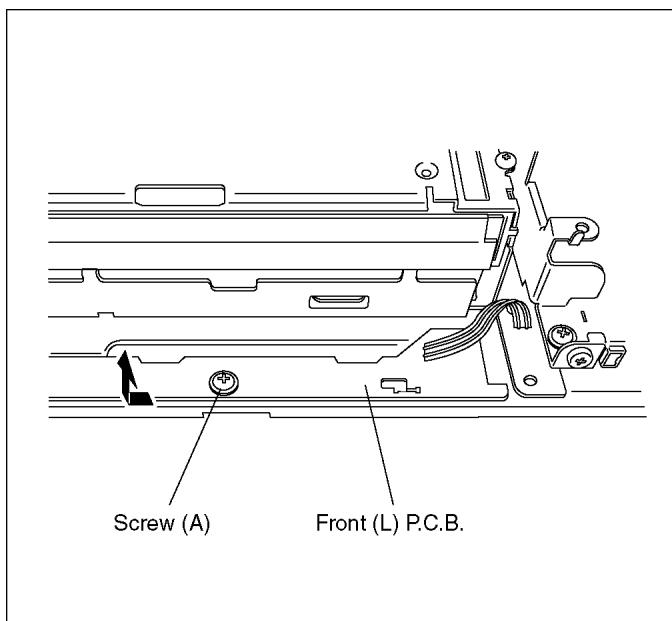
10.9.1. Fan Motor

1. Disconnect Fan Connector and remove 2 Screws (A).
2. Push and unlock 2 Locking Tabs (A) to remove Fan Motor.



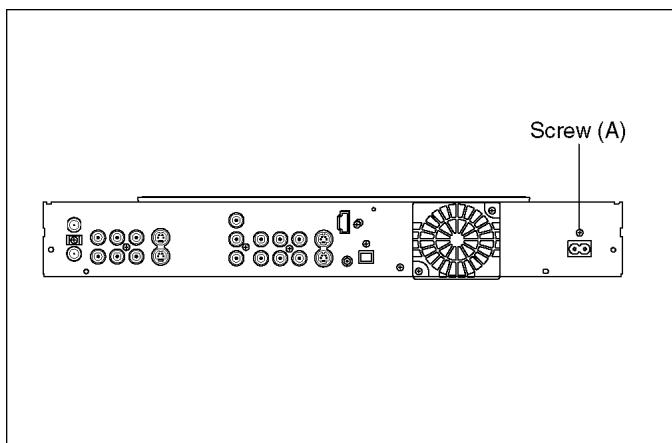
10.10. Front (L) P.C.B.

1. Remove 1 Screw (A).
2. Front (L) P.C.B. is removed in the direction of the arrow.
3. Unsolder soldering of wires and remove Front (L) P.C.B.

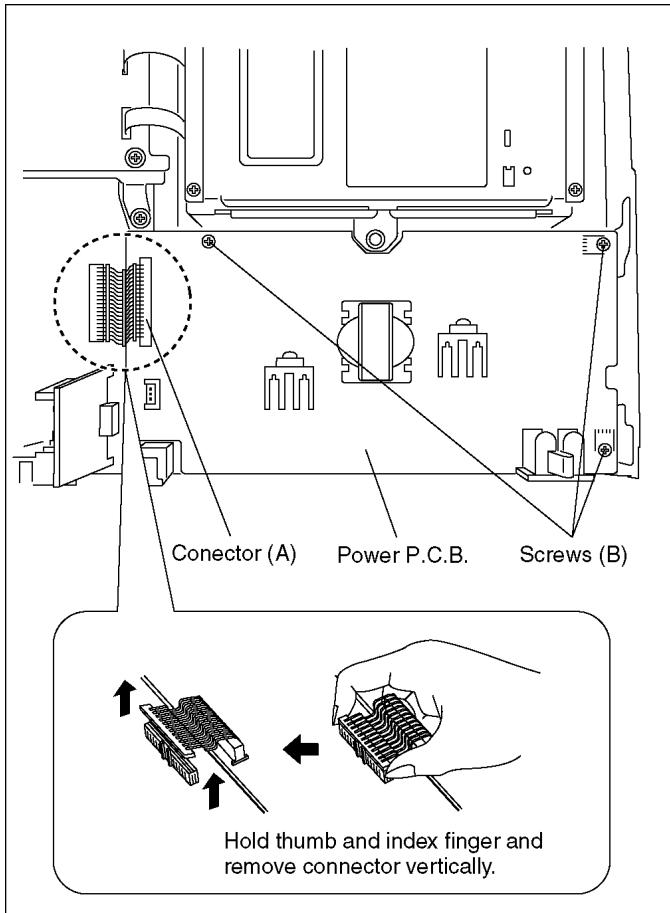


10.11. Power P.C.B.

1. Remove 1 Screw (A).



2. Remove 3 Screws (B) and disconnect Connector (A) to remove Power P.C.B..

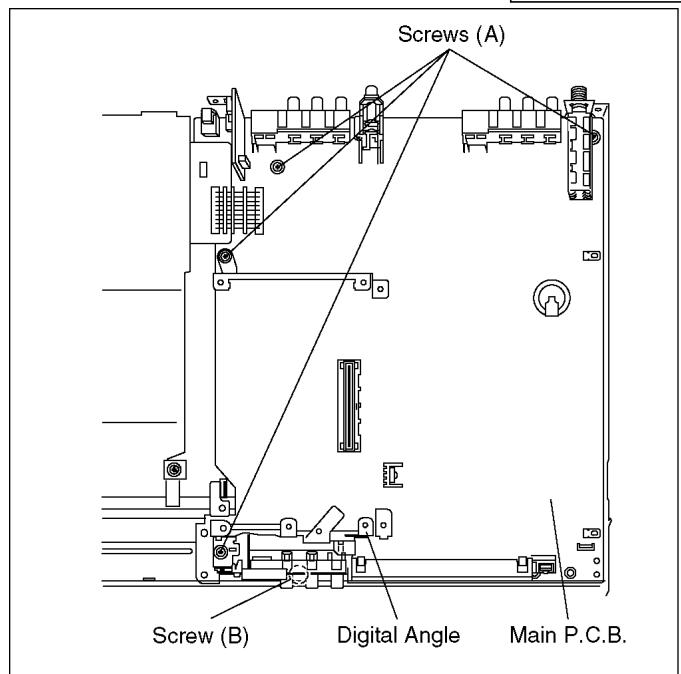


10.12. Main P.C.B.

When replacing Main P.C.B. or EEPROM, "UNFORMAT" indication is displayed and HDD must be formatted.

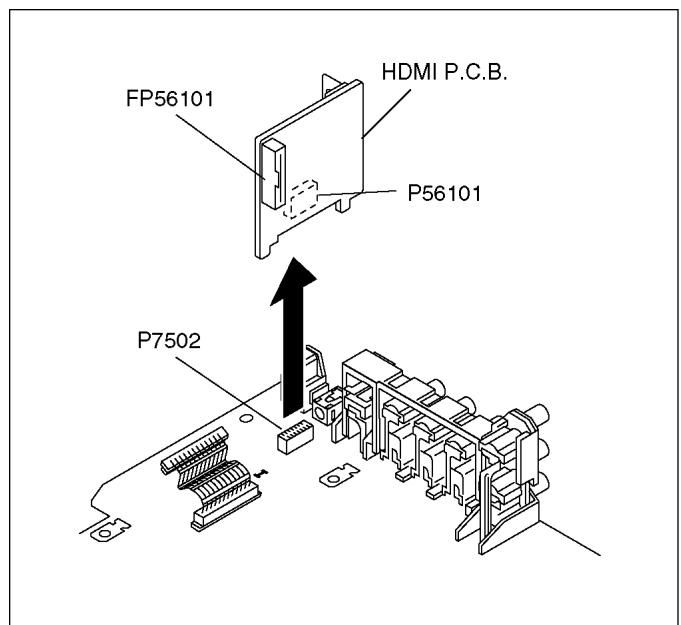
After that, programme in the HDD will be lost.

1. Remove 4 Screws (A) and 1 Screw (B).
2. Remove Digital Angle to remove Main P.C.B..



10.13. HDMI P.C.B.

1. Pull out the HDMI P.C.B. in the direction of the arrow.



11 Measurements and Adjustments

11.1. Service Positions

Note:

For description of the disassembling procedure, see the section 10.

11.1.1. Checking and Repairing of Power P.C.B.

<p>1. Top Case</p> <ul style="list-style-type: none"> Remove 2 Screws (A) on side Remove 3 rear Screws (B) on rear Remove Top Case <p>2. Power P.C.B.</p> <ul style="list-style-type: none"> Remove 1 Screw (A) for AC Inlet fixing Remove 3 Screws (B) for Power P.C.B. fixing Remove Connector (A) to Main P.C.B. <p>Connect Extension Cable between Main P.C.B. and Power P.C.B. (RFKZ0216).</p> <p>Put Power P.C.B. on Insulation Board so that it's foil side faces top.</p>	<p>Caution: Red wire in the extension cable should be connected to (1) pin.</p> <p>Extension Cable between Main P.C.B. and Power P.C.B. (RFKZ0216)</p> <p>Foil side of Power P.C.B.</p> <p>Insulation Board</p> <p>Connector (A)</p>
---	---

11.1.2. Checking and Repairing of RAM / Digital P.C.B. Module

1. Top Case

- Remove 2 Screws (A) on side
- Remove 3 rear Screws (B) on rear
- Remove Top Case

2. Front Panel

- Unlock 1 Locking Tab on upper
- Unlock 2 Locking Tabs on side
- Unlock 3 Locking Tabs on bottom
- Remove Front Panel

3. SD Card P.C.B.

- Remove 2 Screws fixing SD Card P.C.B.
- Remove 1 FFC from Digital P.C.B.
- Remove SD Card P.C.B.

4. RAM/Digital P.C.B. Module

- Remove 6 Screws (A) fixing RAM/Digital P.C.B. Module
- Remove 2 FFCs from HDD and HDMI P.C.B.
- Lift up Digital P.C.B. to remove it

5. DV Jack P.C.B.

- Remove 1 Screw (A) fixing DV Jack P.C.B.
- Remove DV Jack P.C.B.

Attach DV Jack P.C.B. on to Digital P.C.B..
SD Card P.C.B. is wrapped with insulation sheet. Connecting to Digital P.C.B. with original FFC.
Put RAM/Digital P.C.B. Module on side.

Connect Extension Cable between HDD and RAM/Digital P.C.B. Module (RFKZ0366), and between Main P.C.B. and RAM/Digital P.C.B. Module (RFKZ0260).

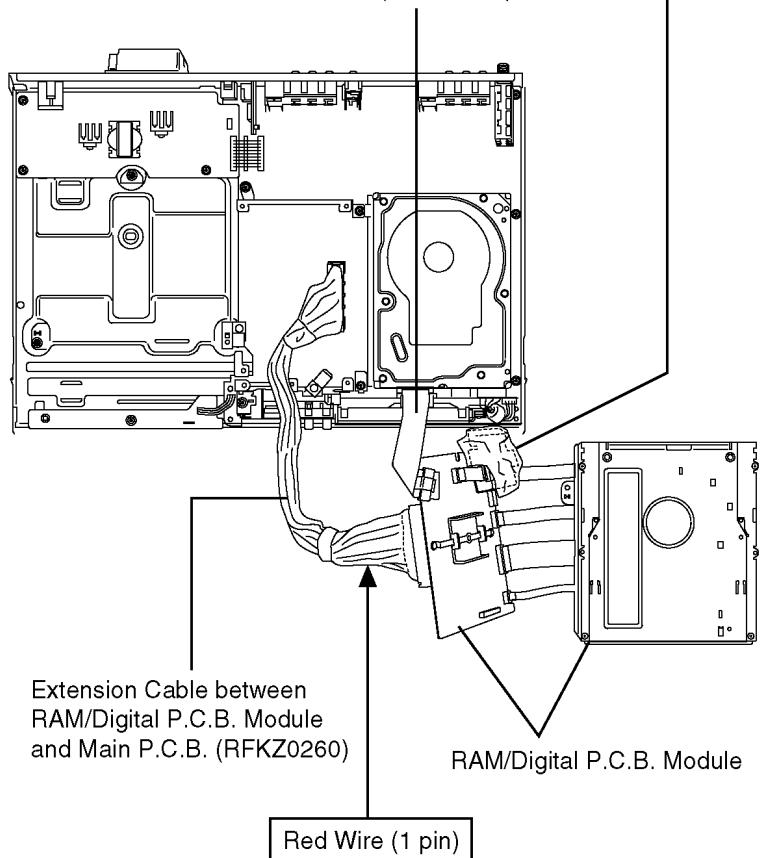
Caution:

Red wire in the extension cable should be connected to (1) pin.

Note:

SD Card P.C.B. is wrapped with insulation sheet.

Extension Cable between RAM/Digital P.C.B. Module and HDD (RFKZ0366)



11.1.3. Checking and Repairing of Main P.C.B.

1. Top Case

- Remove 2 Screws (A) on side
- Remove 3 rear Screws (B) on rear
- Remove Top Case

2. Front Panel

- Unlock 1 Locking Tab on upper
- Unlock 2 Locking Tabs on side
- Unlock 3 Locking Tabs on bottom
- Remove Front Panel

3. SD Card P.C.B.

- Remove 2 Screws (A) fixing SD Card P.C.B.
- Remove 1 FFC from Digital P.C.B.
- Remove SD Card P.C.B.

4. RAM/Digital P.C.B. Module

- Remove 6 Screws (A) fixing RAM/Digital P.C.B. Module
- Remove 2 FFCs from HDD and HDMI P.C.B.
- Lift up Digital P.C.B. to remove it

5. DV Jack P.C.B.

- Remove 1 Screw (A) fixing DV Jack P.C.B.
- Remove DV Jack P.C.B.

6. HDD

- Remove 4Pin Power Cable from HDD
- Remove 4 Screws (A) fixing HDD Angle to remove it with HDD

7. Rear Panel

- Disconnect Fan Connector
- Remove 8 Screws (one is for Tuner)
- Unlock 2 Locking Tabs on side

8. Power P.C.B.

- Remove 1 Screw (A) fixing AC Inlet
- Remove 3 Screw (B) fixing Power P.C.B.
- Remove Connector (A) to Main P.C.B.

9. Front (L) P.C.B. and Main P.C.B.

- Remove 1 Screw to remove Front (L) P.C.B.
- Remove 5 Screws to remove Main P.C.B. (one is for Front Jack)

SD Card P.C.B. is wrapped with insulation sheet. Connecting to Digital P.C.B. with original FFC. Attach DV Jack P.C.B. to Digital P.C.B.. Remove Power P.C.B. from Chassis, and put Power P.C.B. so that its component side faces top. Remove Front (L) and Main P.C.B. from Chassis, and put Front (L) and Main P.C.B. so that its foil side faces top. Put Insulation Board on DVD Drive, then place Digital P.C.B. on Insulation Board.

Connect Extension Cable between Main P.C.B. and RAM/Digital P.C.B. Module (RFKZ0260), and between Main P.C.B. and Power P.C.B. (RFKZ0216), and between HDD Power Cable and Main P.C.B. (RFKZ0339), and between HDD and RAM/Digital P.C.B. Module (RFKZ0366), and between Fan Motor and Power P.C.B. (RFKZ0168).

Caution:

Red wire in the extension cable should be connected to (1) pin.

Extension Cable between Fan Motor and Power P.C.B. (RFKZ0168)

Component side of Power P.C.B.

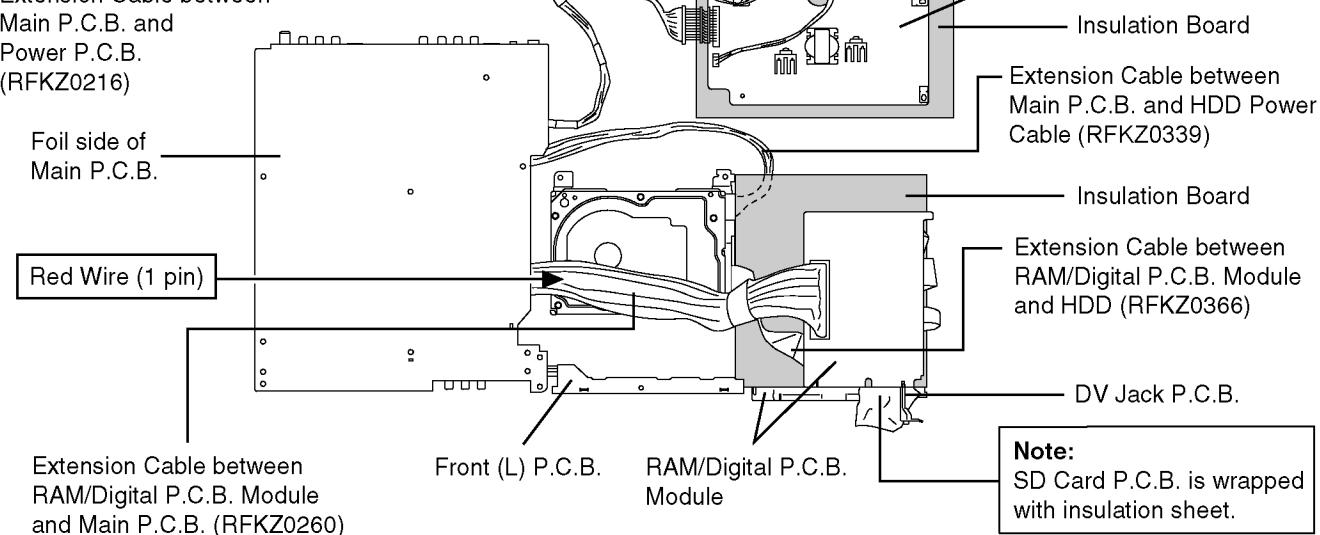
Insulation Board

Extension Cable between Main P.C.B. and HDD Power Cable (RFKZ0339)

Insulation Board

Extension Cable between RAM/Digital P.C.B. Module and HDD (RFKZ0366)

DV Jack P.C.B.

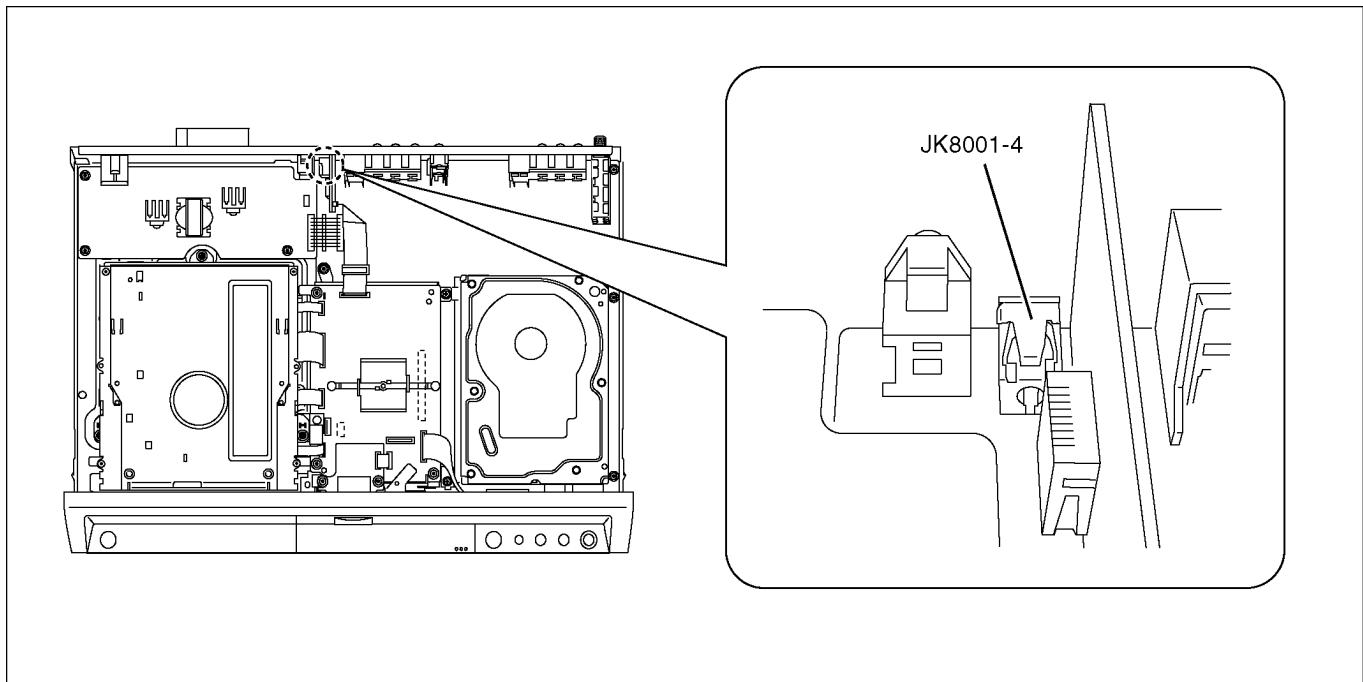


11.1.3.1. Checking IR Circuit

NOTE1: Even if Main P.C.B. is not removed, IR Circuit can be checked.

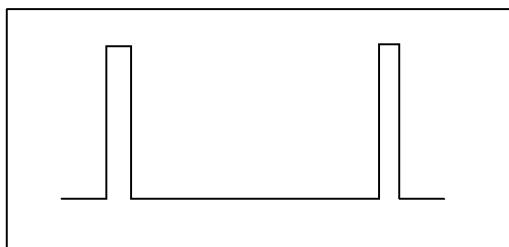
NOTE2: Prepare the Oscilloscope

1. Remove Top Case.
2. Turn on the power. Then if "Welcome ..." was displayed on the TV monitor, press [ENTER] to advance next stage.
Then press [ENTER] and proceed to step 6.
(*After "EPG" has been set up, this indication will not appear.)
3. Press [FUNCTIONS].
4. Select "**TV GUIDE**", and then press [ENTER].
5. Press [ENTER] to advance next stage.
6. Press [ENTER] to advance next stage.
7. Select "**USA**", and then press [ENTER].
8. Input "**0 2 0 3 2**", and then press [ENTER].
9. Select "Yes", and then press [ENTER].
10. Select "Yes", and then press [ENTER].
11. Select "Ch3", and then press [ENTER].
12. Press [ENTER].
13. Select "**Not Listed**", and then press [ENTER].
14. Connect scope to JK8001-4



15. Press [ENTER], and then if the P.C.B. is "OK", pulse signals of approx. 4.5Vp-p are output twice from JK8001-4.

(When you want to check again, select "**Test this code again**" and press [ENTER], then Pulse signals are output again.



*Recommended ranges of the Oscilloscope:

V: DC range, and 1V/div.

T: 1msec. /div.

11.1.4. Checking and Repairing of HDD

1. Top Case

Remove 2 Screws (A) on side

Remove 3 rear Screws (B) on rear

Remove Top Case

2. HDD

Remove 1 FFC from Digital P.C.B.

Remove 4 Pin Power Cable from Main P.C.B.

Remove 4 Screws (A) to remove HDD Angle with HDD

Connect HDD ATAPI Connector to Replacement HDD

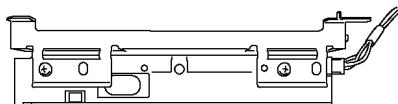
Connect 4 Pin Power Cable to Replacement HDD

Put Replacement HDD on Insulation Board.

Connect Extension Cable between Replacement HDD and RAM/Digital P.C.B. Module (RFKZ0366), and between Replacement HDD and Main P.C.B. (RFKZ0339).

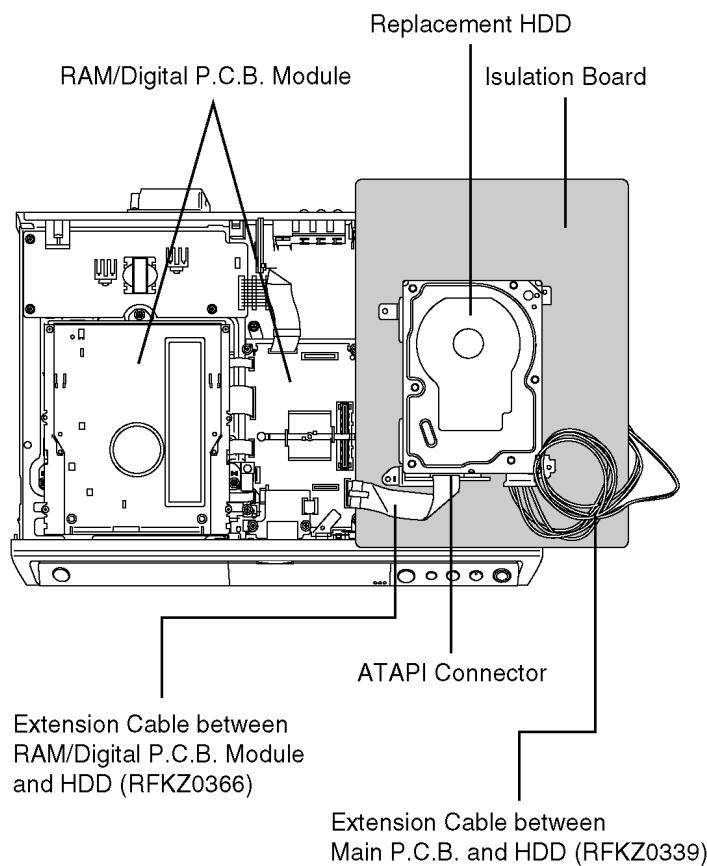
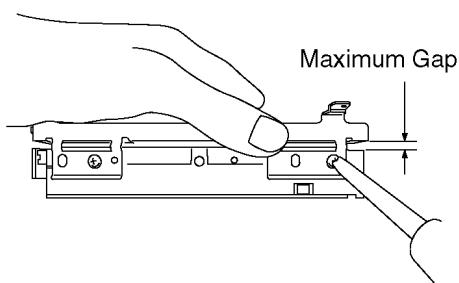
Caution for Removing HDD

Put HDD with HDD Angle up and down inversely and remove 4 screws to remove HDD so as not to give a shock to HDD.



Caution for Attaching HDD

Put HDD up and down inversely, and put HDD Angle on to HDD and tighten 4 screws while lifting HDD Angle so as to keep maximum gap between HDD and HDD Angle.



11.2. Caution for Replacing Parts

11.2.1. Items that should be done after replacing parts

✓ : Necessary - : Unnecessary

Items that Should be done Replacing Parts	Reset IC7501 (*Note1)	Obtain and register a new registration code. (*Note2)	Main Firm update (*Note3)	HDD Format
Main P.C.B.	✓	✓	-	✓
IC7501 (Timer IC)	✓	-	-	-
IC7401 (EEPROM)	-	✓	-	✓
HDD	-	-	✓	✓

*Note1:

Resetting Method

Reset object	Condition of power	Short Terminal
IC7501 (Timer IC)	POWER ON	TL7507 (X-RESET) and GND

*Note2:

Please will always pass the customer "Warning for Customers Who Use the DivX Video-on-Demand content." with the product and get it when you unavoidably exchange EEPROM or P.C.B. including EEPROM (When the product is exchanged, it is the same.).

You must use print attached to service part (EEPROM or P.C.B. including EEPROM) or must use copy of print below as "Warning for Customers who use the DivX Video-on-Demand content."

Information needed without fail for the customer for whom it is used continuing DivX Video-on-Demand Service to "Manual for the customer" is recorded.

Appendix:

* Parts that memorize user's information are only EEPROM.

* The registration of Registration Code is possible for half a year up to 6 recorders up to 10 recorders a year.
Replacement of EEPROM or P.C.B. including EEPROM spends one of this.

Registration Code is memorized in EEPROM (RFKFxxxxxx).

Model without VHS: Main P.C.B.

Model with VHS: Digital I/F P.C.B. (Power & DVD I/F/P.C.B.)

If exchange above P.C.B. or EEPROM, new registration Code differ from previous Registration Code will be generated.

In this case if your customer uses DivX Video-on-Demand service, he/she will no longer be able to play any content that he/she purchased under that same registration code.

Therefore your customer will need to obtain and register the new registration code.

*Copy this page and cut on the dotted line and give the lower half to your customer.

Warning for Customers who use the DivX Video-on-Demand content.

1. The registration code has been changed for the repair of the product or the product exchange.
2. Obtain and register a new registration code, otherwise you will no longer be able to play DivX Video-on-Demand content.
3. Follow the procedure on the DivX Video-on-Demand web site to register at

<http://vod.divx.com/>

* If you do not use the DivX Video-on-Demand content, please ignore this warning.

Note3:

Please prepare latest firmware updating disc.

* Main Firm is being recorded in HDD, but new HDD has no data.

Writing Procedure of Main Firm:

<<Caution>>

- (1) Writing of Main Firm needs 3, 4 minutes.
- (2) Never cut the power of DVD Recorder until writing in Firmware ends.
- (3) Initial settings and contents of reservation will not change if writing is normally completed.

1. Prepare updating disc for firm ware.
2. Replace HDD.
3. Turn on power of DVD Recorder.
4. After [PLEASE WAIT] is displayed on FL., [HDD ERR] is displayed on FL.
5. Tray opens automatically.
6. Insert updating disc for Firmware and press OPEN/CLOSE key. (If a wrong disc was inserted, [NG DISK] [NO FVU] is displayed on FL.)
7. [LOAD] → [LD FVU] ↔ [M_FIRM] are displayed on FL alternately.
8. [MAIN] ↔ [UPD OK] blink alternately and Tray opens. Take out disc (Writing was finished).
9. Press Power button to turn off power.
10. Press Power button to turn on power.
11. [HELLO] → [SELF CHECK] are displayed on FL.
12. [UNFORMAT] is displayed on FL.
13. After [UNFORMAT] was displayed, message to request FORMAT is displayed on TV screen.
14. Select [Yes] and press [ENTER] key to format HDD.

(After FORMAT, program in HDD will be lost, but Main firm will not be lost.
 "Write of the main farm" is completed above.

* Drive firm is not updated by above operation. If you wish update Drive firm, please prepare the disc for latest firmware update, and write it again.

* If the version of the firm you have prepared was same as or later than that has already been written in deck, 'UNSUPPORT' is displayed on FL.

* In a usual updating of firmware, writing is not performed when the timer reservation standby was not released.

11.2.2. Notice after replacing RAM/Digital P.C.B. Module

After replacing RAM/Digital P.C.B. Module, "TM L1" is displayed on FL.

Once power off, and start-up again.

11.3. Standard Inspection Specifications after Making Repairs

After making repairs, we recommend performing the following inspection, to check normal operation.

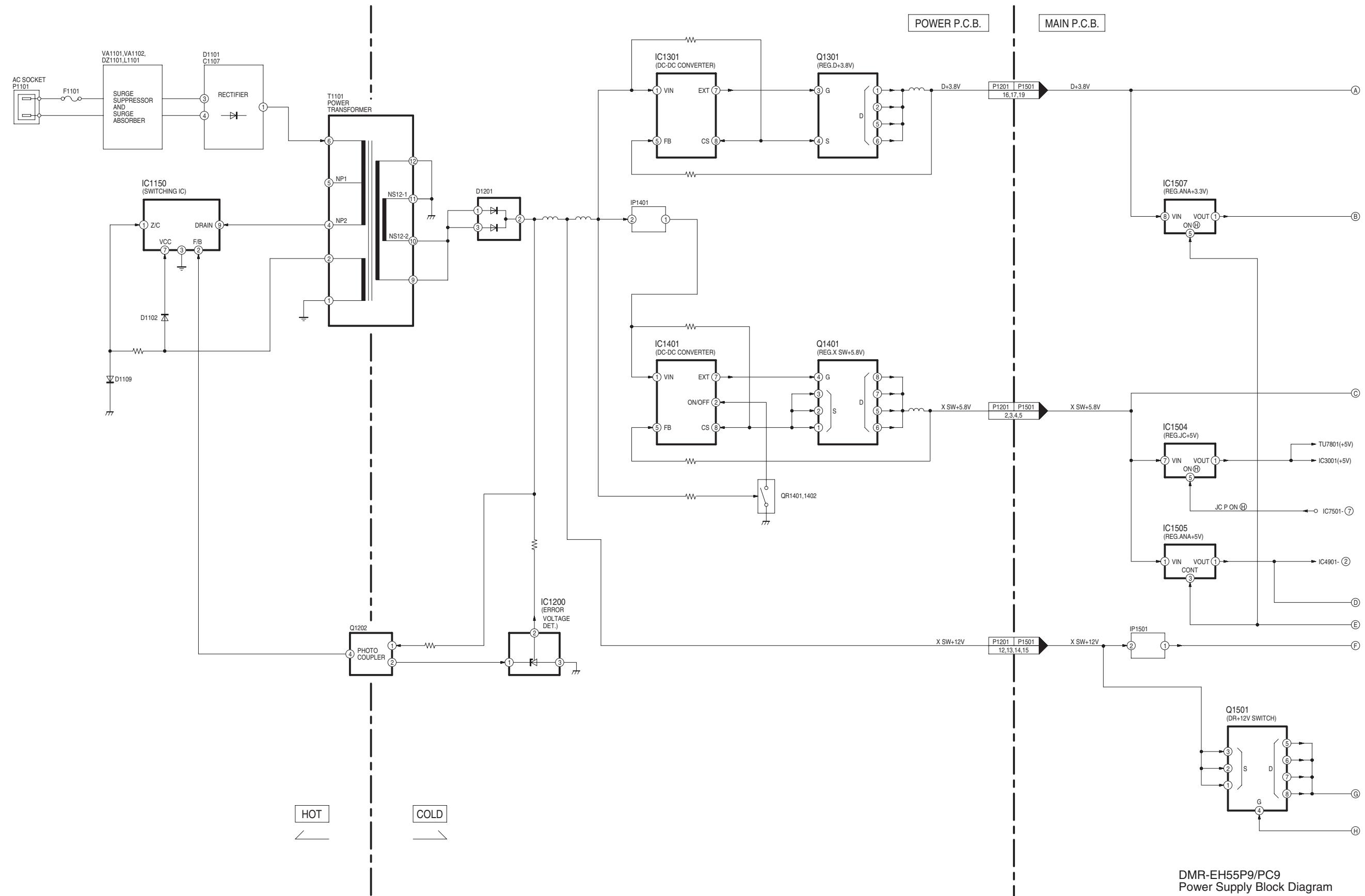
No.	Procedure	Item to Check
1	Turn on the power, and confirm items pointed out.	Items pointed out should reappear.
2	Insert RAM disc.	The Panasonic RAM disc should be recognized.
3	Enter the EE (TU IN / AV IN - AV OUT) mode.	No abnormality should be seen in the picture, sound or operation.
4	Perform auto recording and playback for one minute using the RAM disc.	No abnormality should be seen in the picture, sound or operation. *Panasonic DVD-RAM disc should be used when recording and playback.
5	Model with the HDD: Perform auto recording and playback for one minute using the HDD.	No abnormality should be seen in the picture, sound or operation.
6	If a problem is caused by a VCD, DVD-R, DVD-Video, Audio-CD, or MP3, playback the test disc.	No abnormality should be seen in the picture, sound or operation.
7	Models with SD Card Slot or DV Input Jack: In case of that the trouble is caused by SD card and/or DV terminal.	Models with SD Card or DV Input Jack; 1) SD Card: Check to be able to display and copy the picture. 2) DV terminal: Check to be able to record from DVC.
8	After checking and making repairs, upgrade the firmware to the latest version.	Make sure that [FIRM_SUCCESS] appears in the FL displays. *[UNSUPPORT] display means the unit is already updated to newest same version. Then version up is not necessary.
9	Transfer [9][9] in the service mode setting, and initialize the service settings (return various settings and error information to their default values. The laser time is not included in this initialization).	Make sure that [CLR] appears in the FL display. After checking it, turn the power off.

Use the following checklist to establish the judgement criteria for the picture and sound.

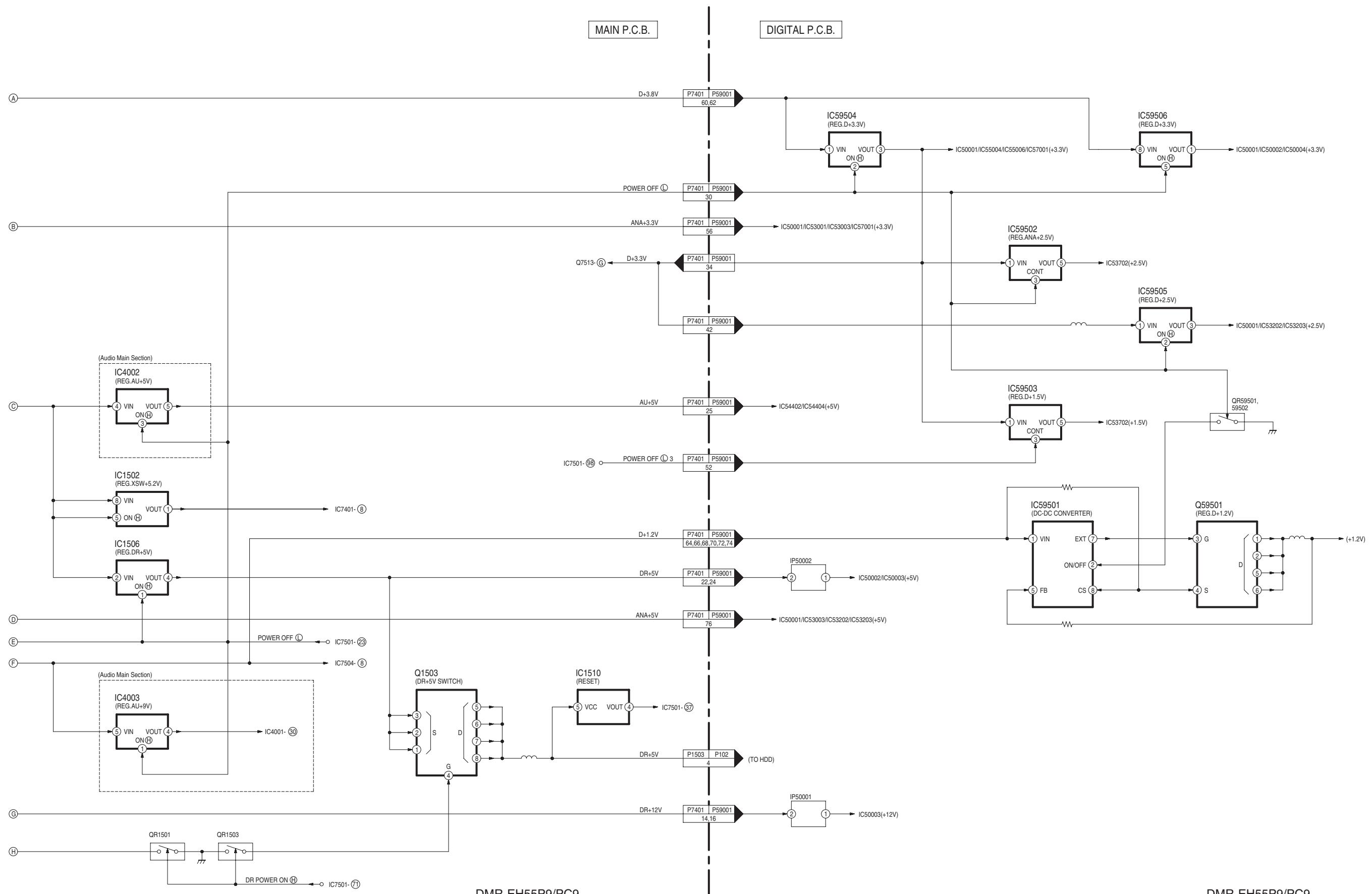
Item	Contents	Check	Item	Contents	Check
Picture	Block noise		Sound	Distorted sound	
	Crosscut noise			Noise (static, background noise, etc.)	
	Dot noise			The sound level is too low.	
	Picture disruption			The sound level is too high.	
	Not bright enough			The sound level changes.	
	Too bright				
	Flickering color				
	Color fading				

12 Block Diagram

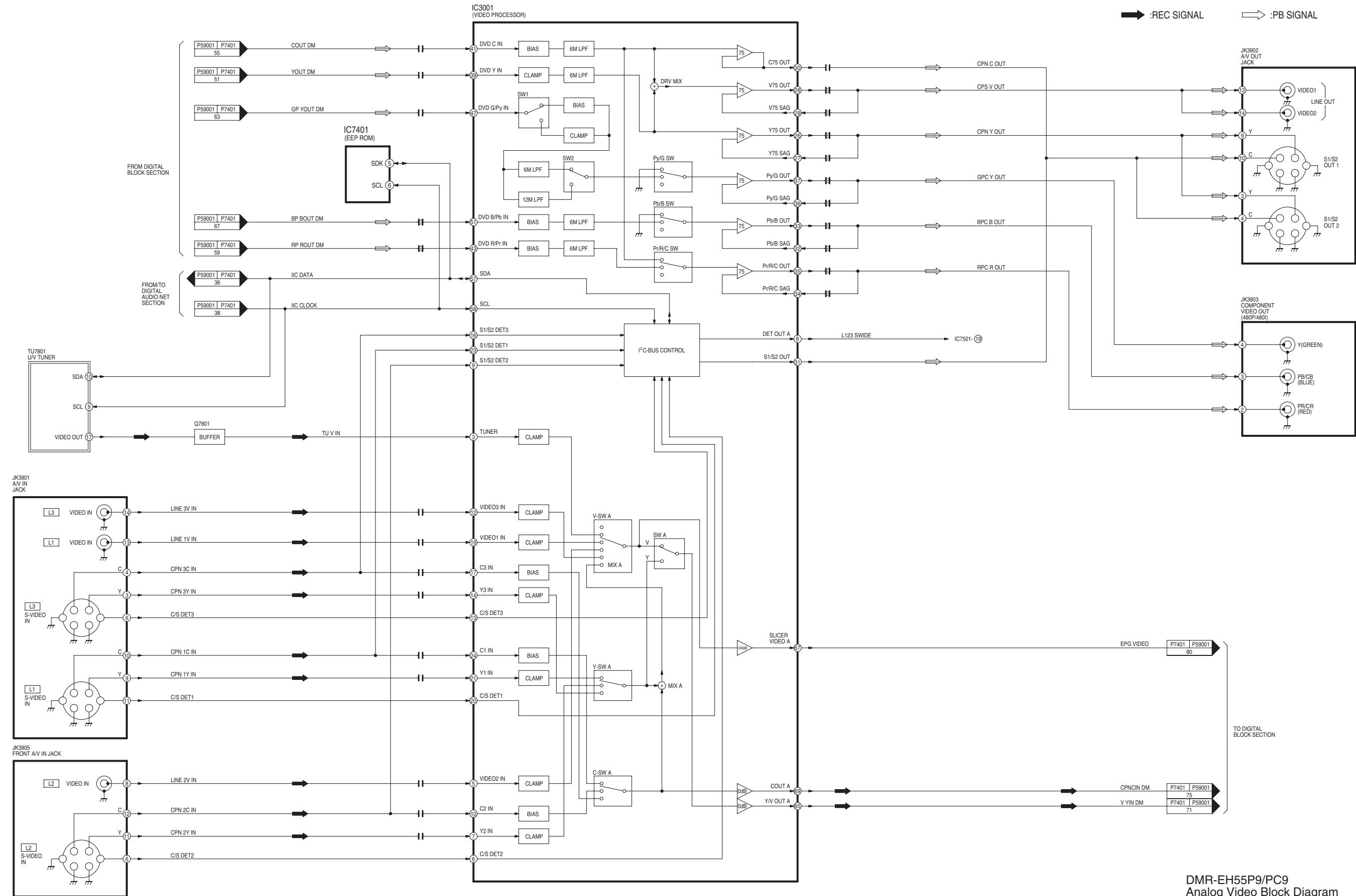
12.1. Power Supply Block Diagram



DMR-EH55P9/PC9
Power Supply Block Diagram

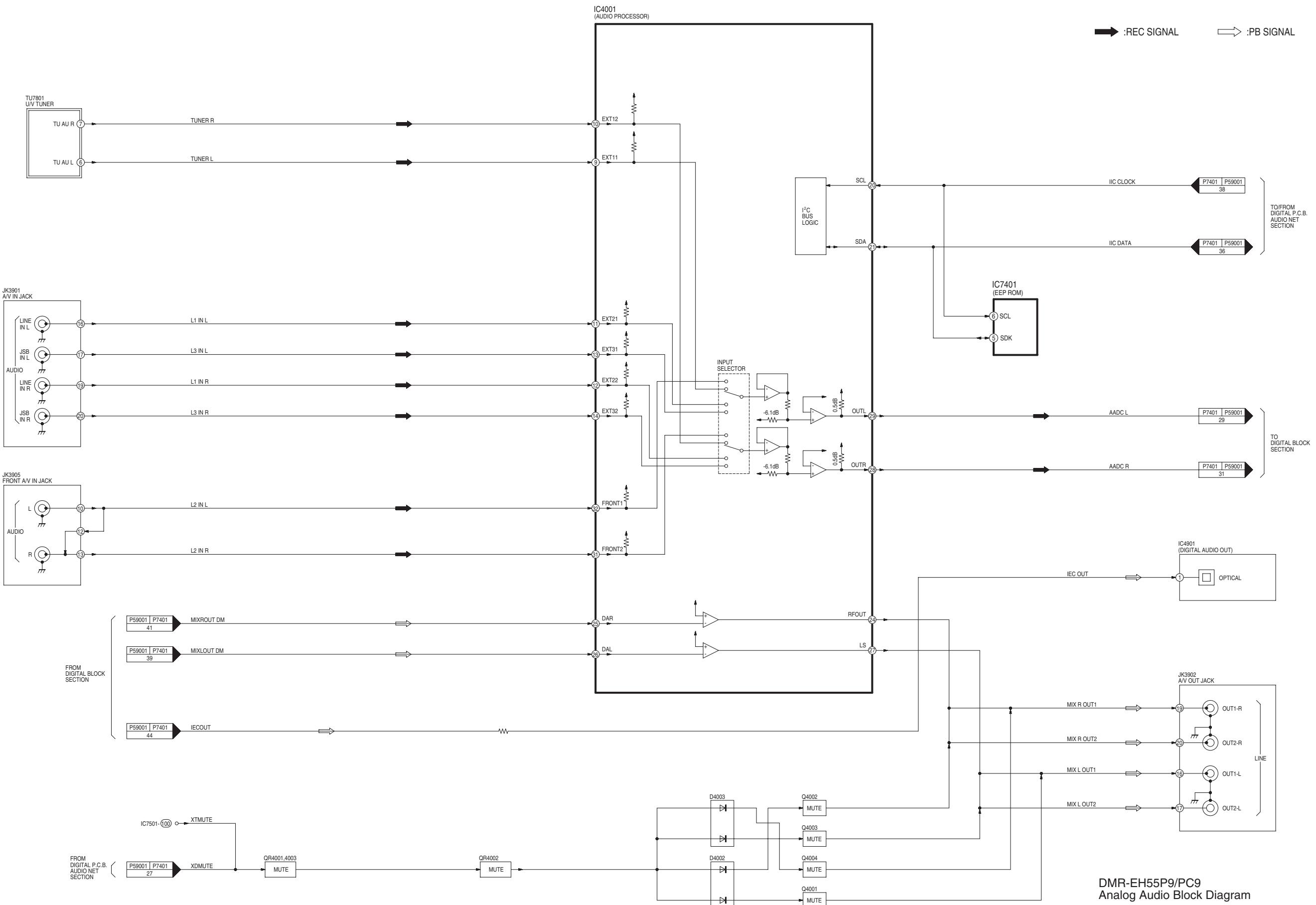
DMR-EH55P9/PC9
Power Supply Block DiagramDMR-EH55P9/PC9
Power Supply Block Diagram

12.2. Analog Video Block Diagram



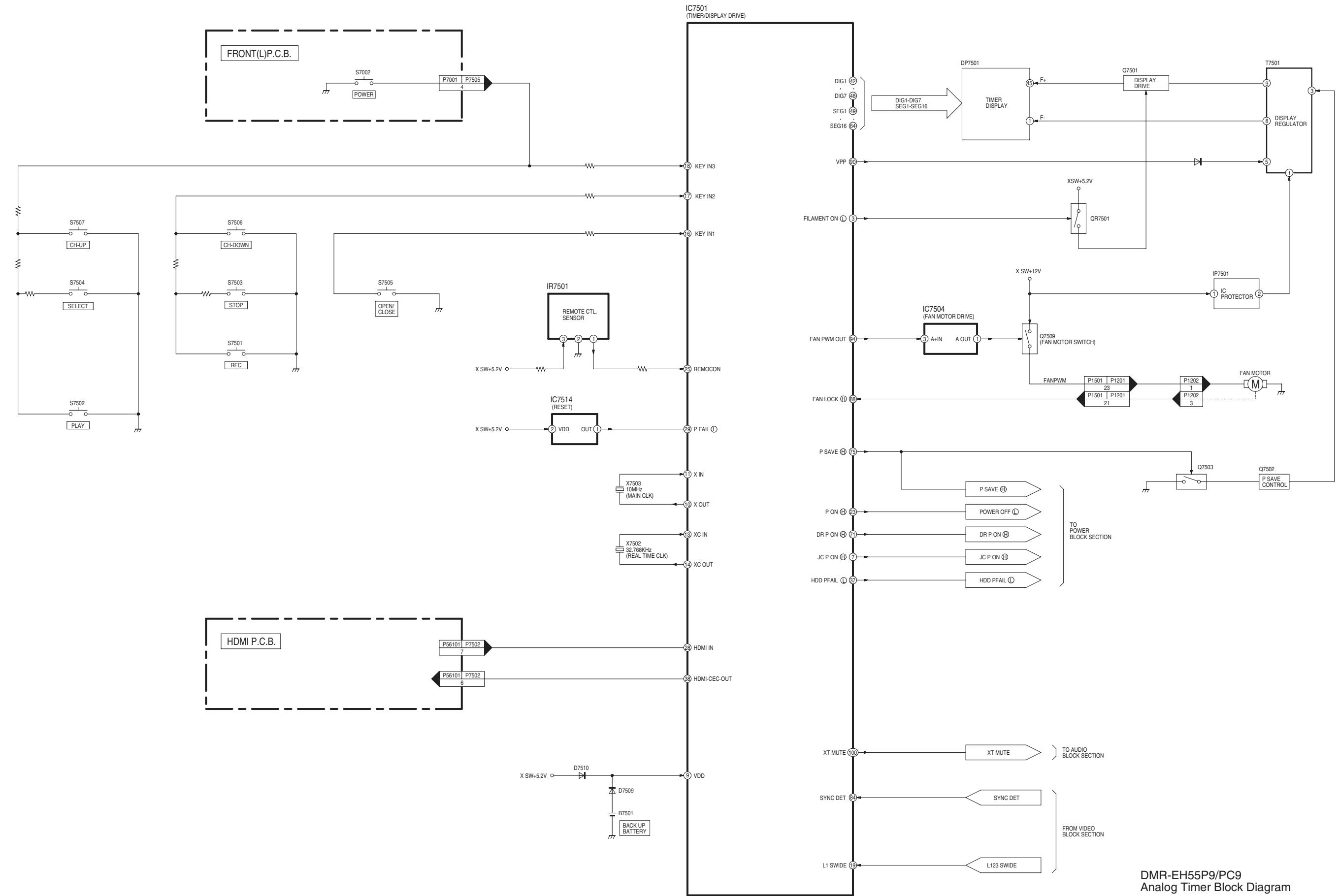
DMR-EH55P9/PC9
Analog Video Block Diagram

12.3. Analog Audio Block Diagram



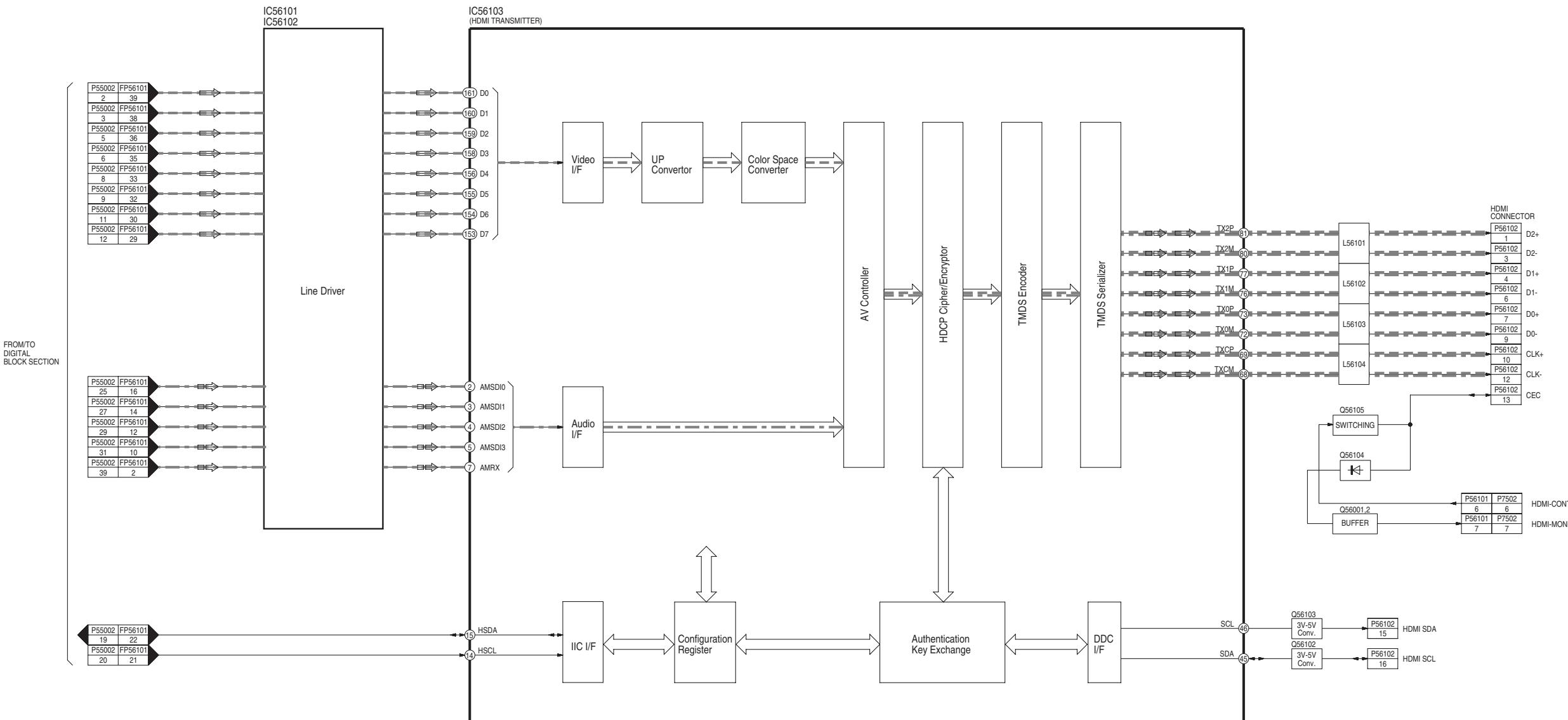
DMR-EH55P9/PC9
Analog Audio Block Diagram

12.4. Analog Timer Block Diagram



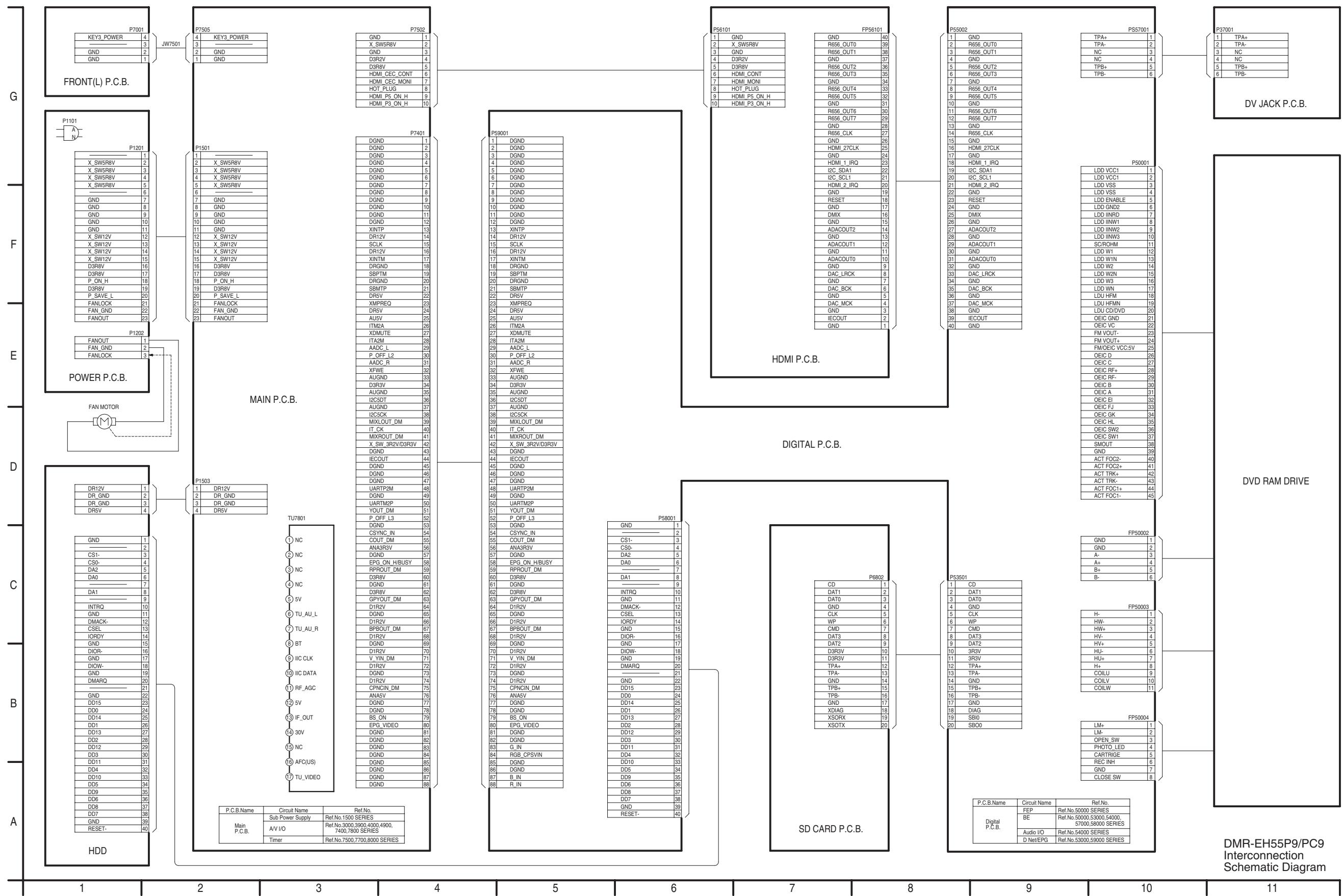
DMR-EH55P9/PC9
Analog Timer Block Diagram

12.5. HDMI Block Diagram



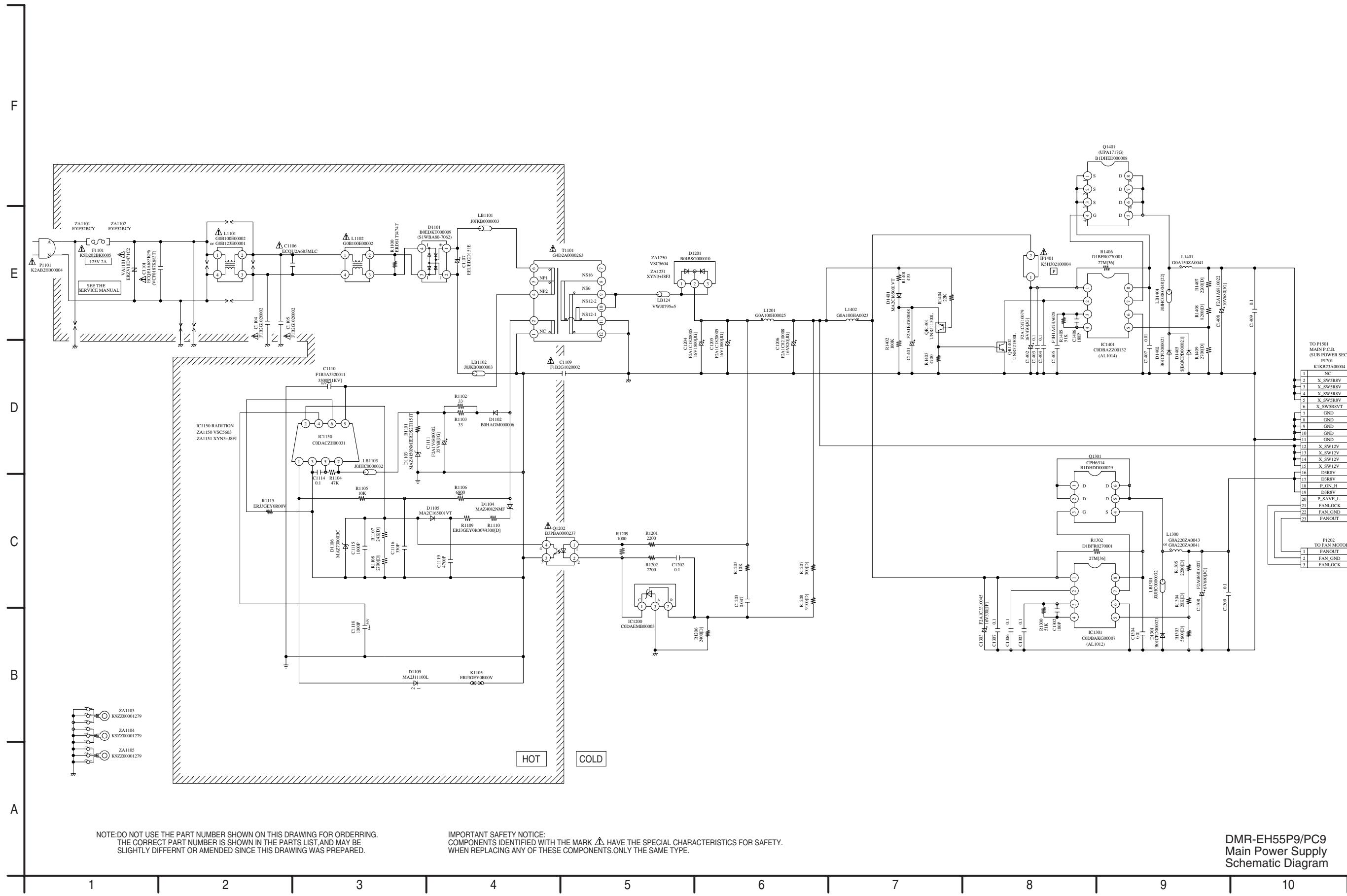
13 Schematic Diagram

13.1. Interconnection Schematic Diagram

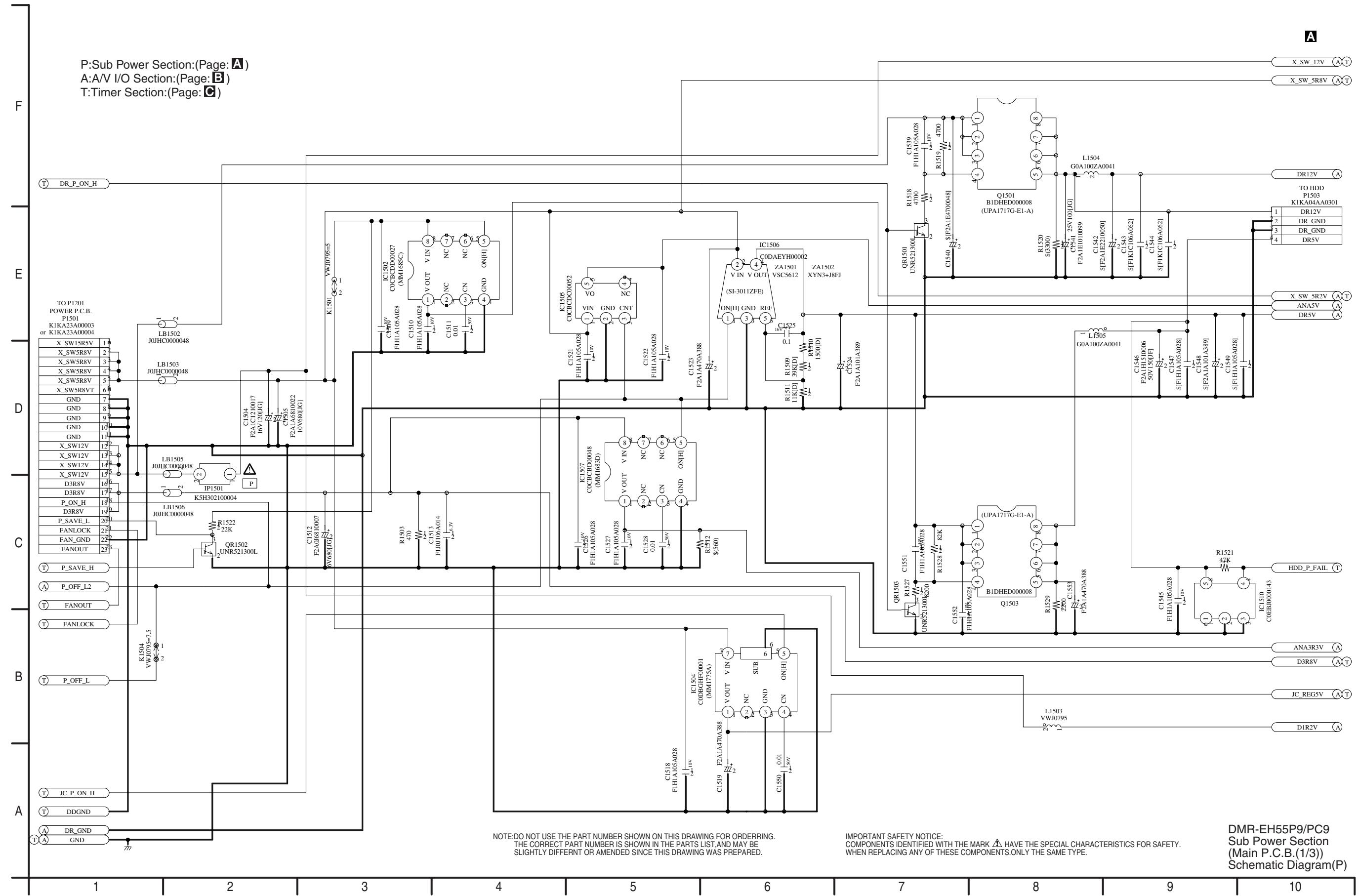


DMR-EH55P9/PC9
Interconnection
Schematic Diagram

13.2. Main Power Supply Schematic Diagram

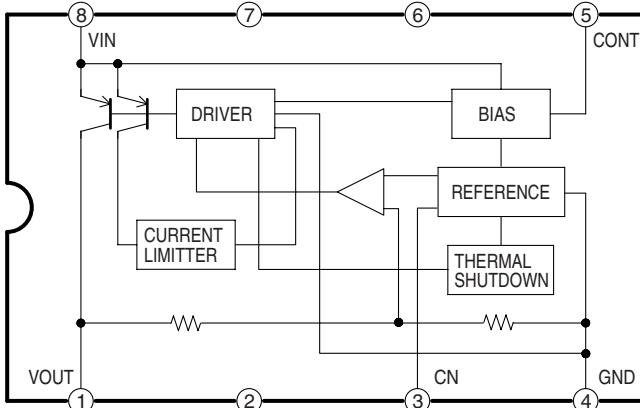


13.3. Sub Power Section (Main P.C.B.(1/3)) Schematic Diagram (P)

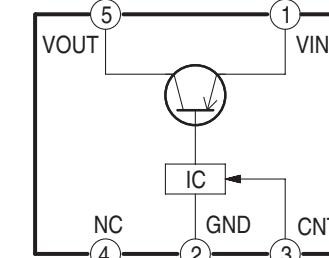


DMR-EH55P9/PC9
Sub Power Section
(Main P.C.B.(1/3))
Schematic Diagram(P)

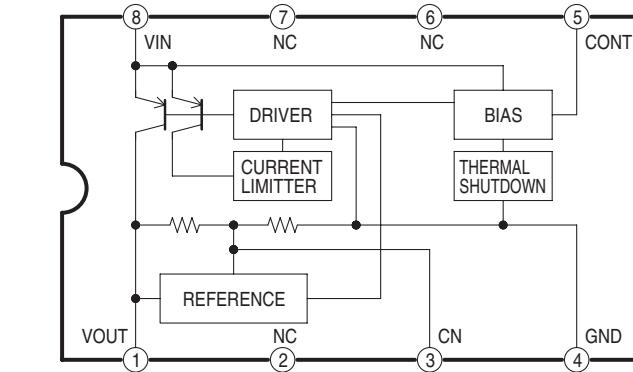
IC1502
X SW +5.2V SWITCHING REGULATOR
IC-DETAIL BLOCK DIAGRAM



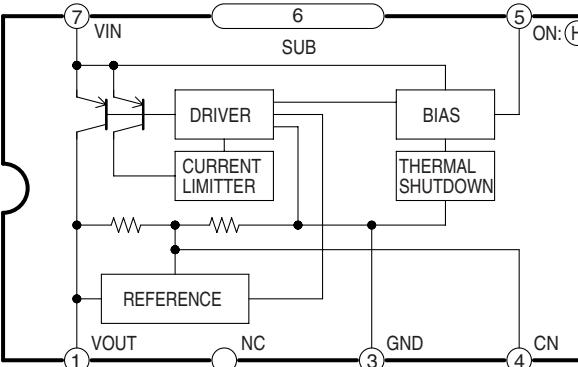
IC1505
ANA +5V SWITCHING REGULATOR
IC-DETAIL BLOCK DIAGRAM



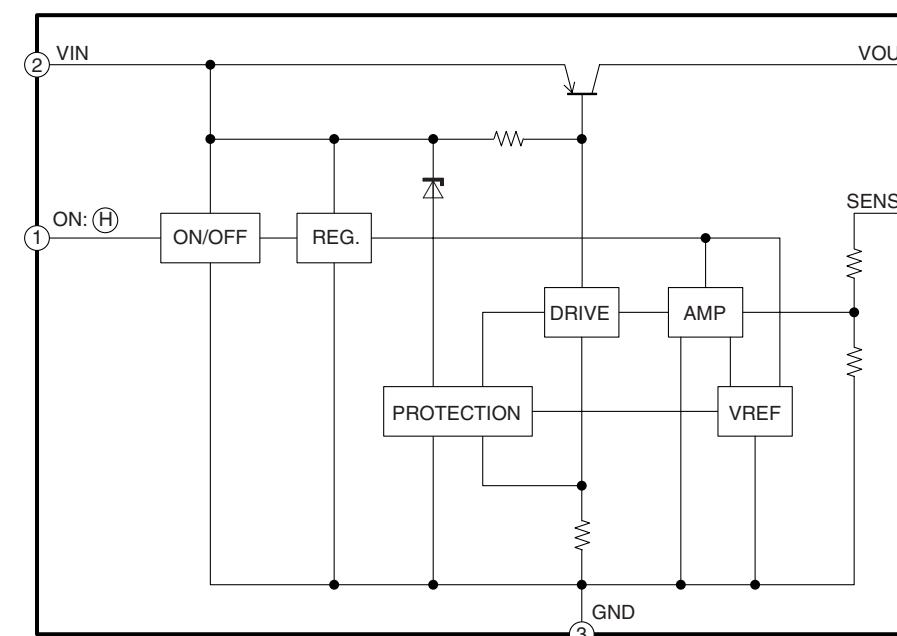
IC1507
ANA +3.3V SWITCHING REGULATOR
IC-DETAIL BLOCK DIAGRAM



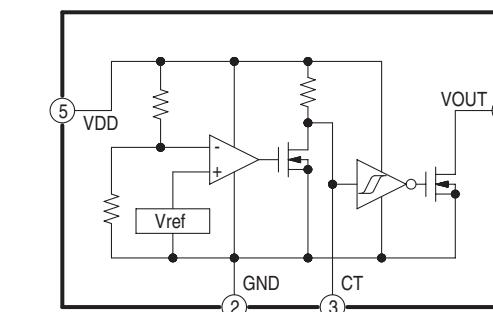
IC1504
JC +5V SWITCHING REGULATOR
IC-DETAIL BLOCK DIAGRAM



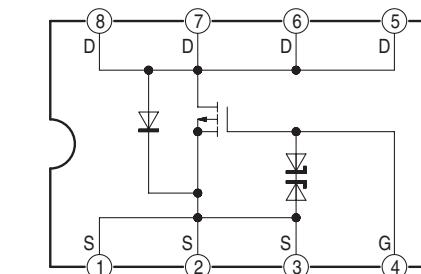
IC1506
DR +5V SWITCHING REGULATOR
IC-DETAIL BLOCK DIAGRAM



IC1510
VOLTAGE DETECTING
IC-DETAIL BLOCK DIAGRAM



Q1501,1503
POWER SUPPLY
Q-DETAIL BLOCK DIAGRAM



IC1502 Detail Block Diagram

IC1504 Detail Block Diagram

IC1505 Detail Block Diagram

IC1506 Detail Block Diagram

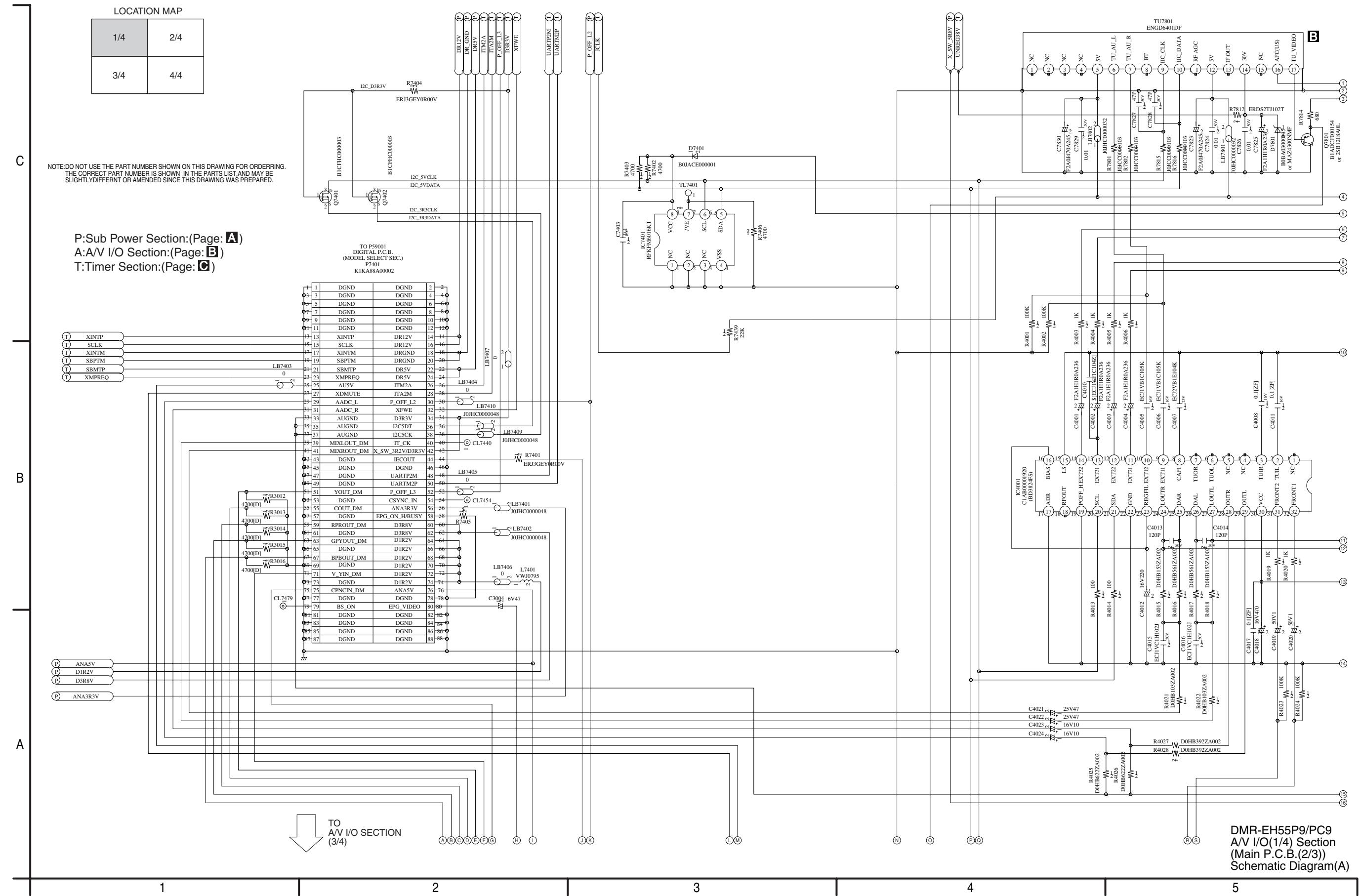
IC1507 Detail Block Diagram

IC1510 Detail Block Diagram

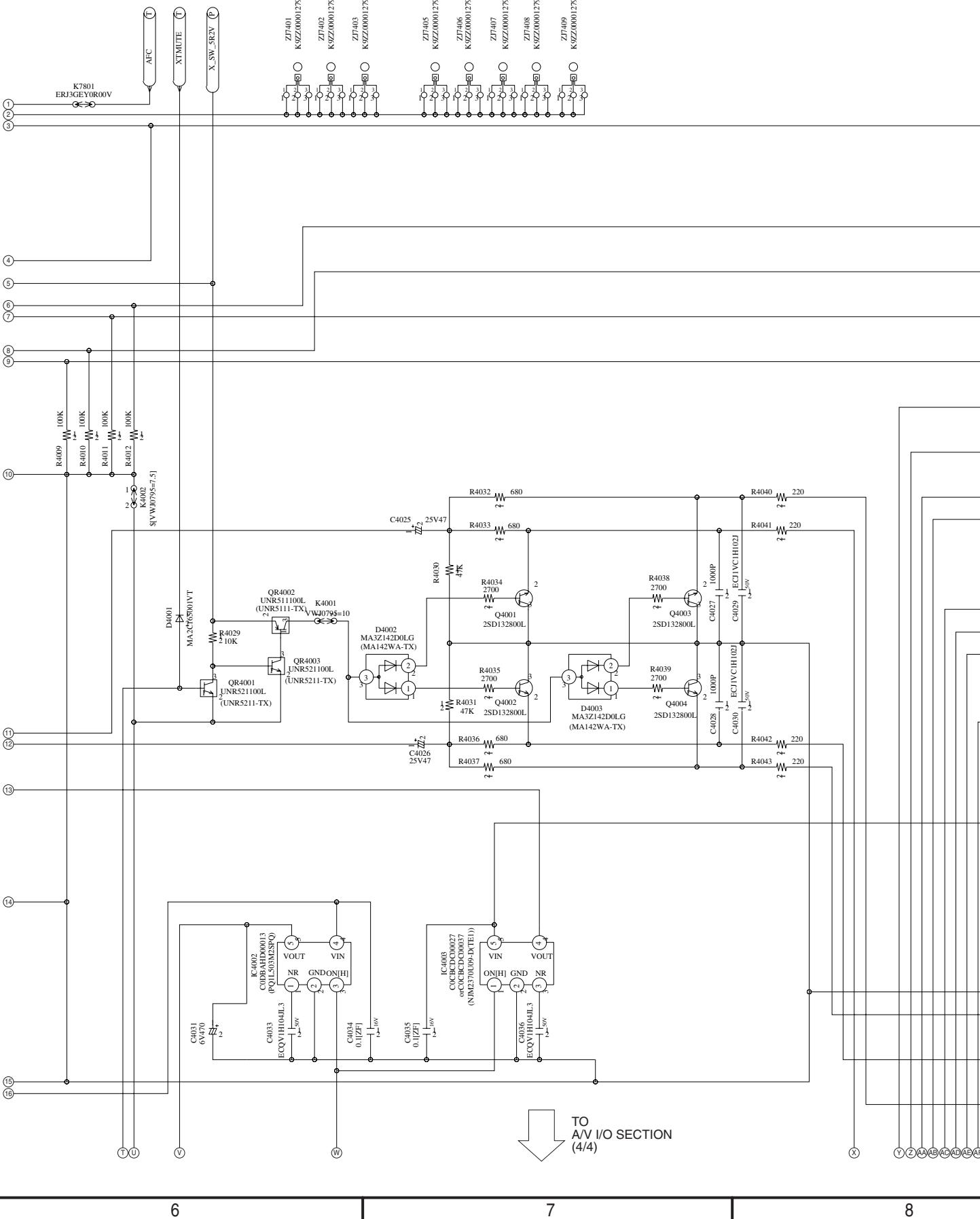
Q1501,1503 Detail Block Diagram

DMR-EH55P9/PC9 IC,Q-Detail Block Diagram

13.4. A/V I/O (1/4) Section (Main P.C.B.(2/3)) Schematic Diagram (A)



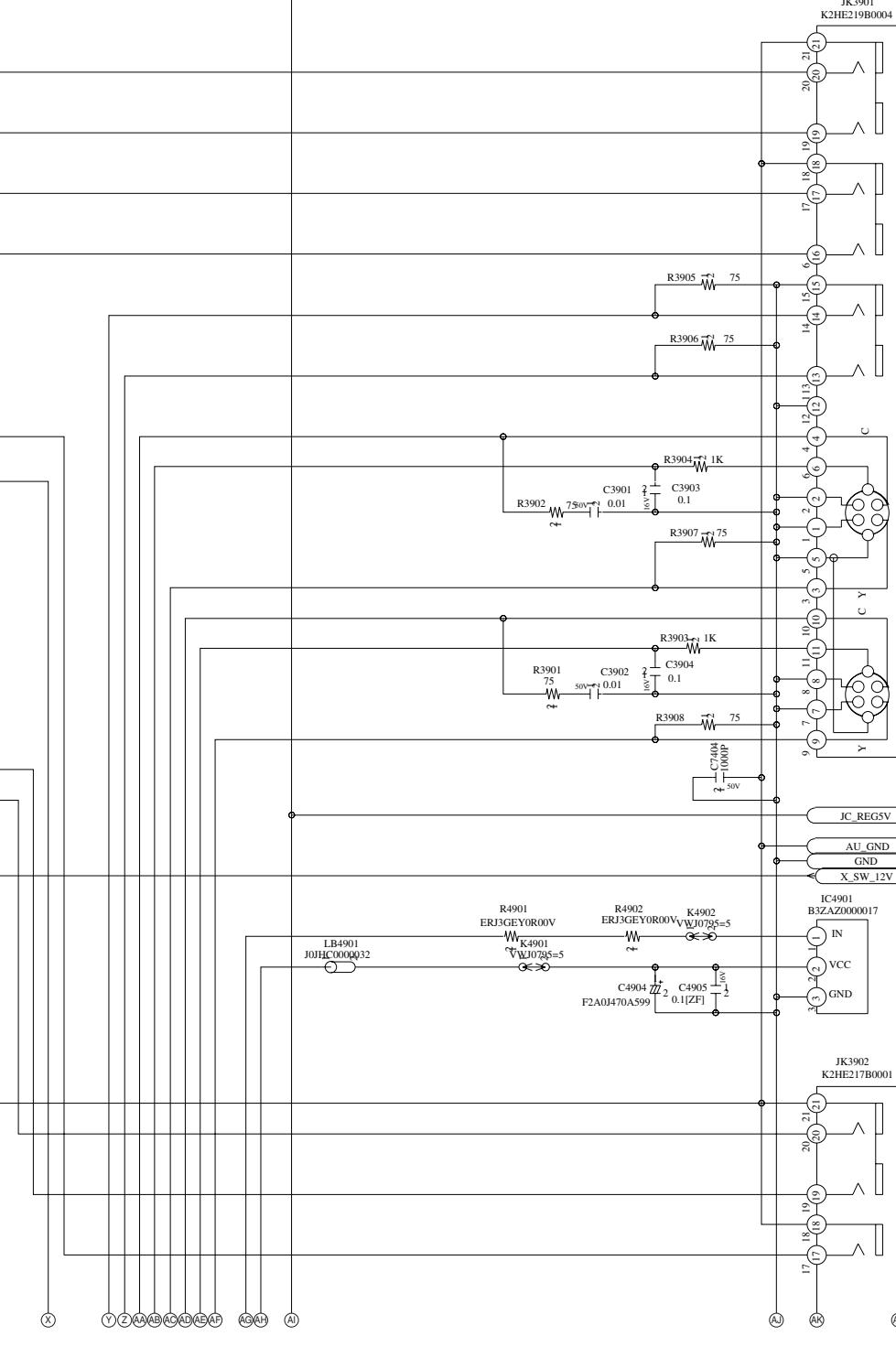
13.5. A/V I/O (2/4) Section (Main P.C.B.(2/3)) Schematic Diagram (A)



NOTE:DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING.
THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST,AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

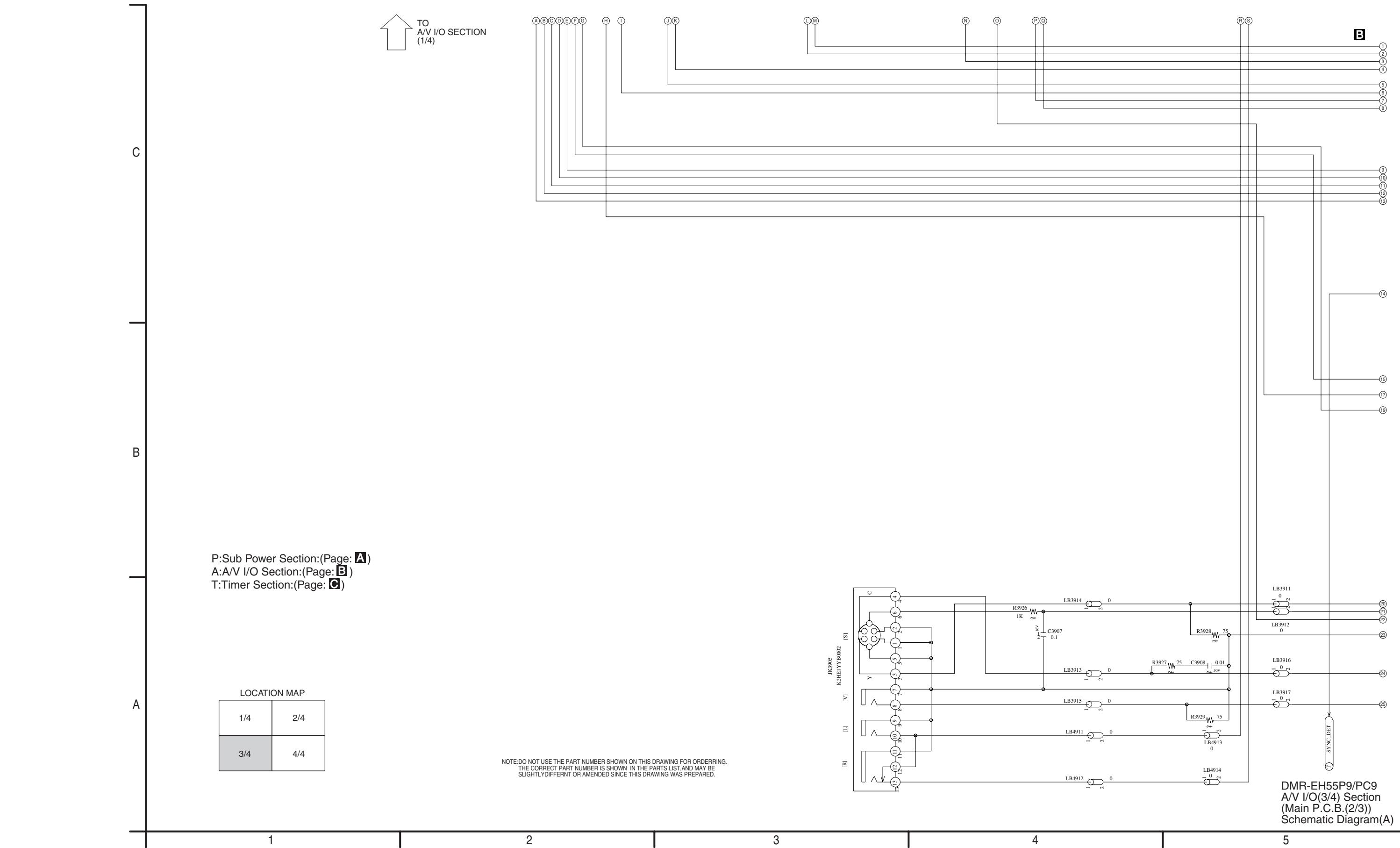
P:Sub Power Section:(Page:**E**)
A:A/V I/O Section:(Page:**E**)
T:Timer Section:(Page:**C**)

LOCATION MAP	
1/4	2/4
3/4	4/4

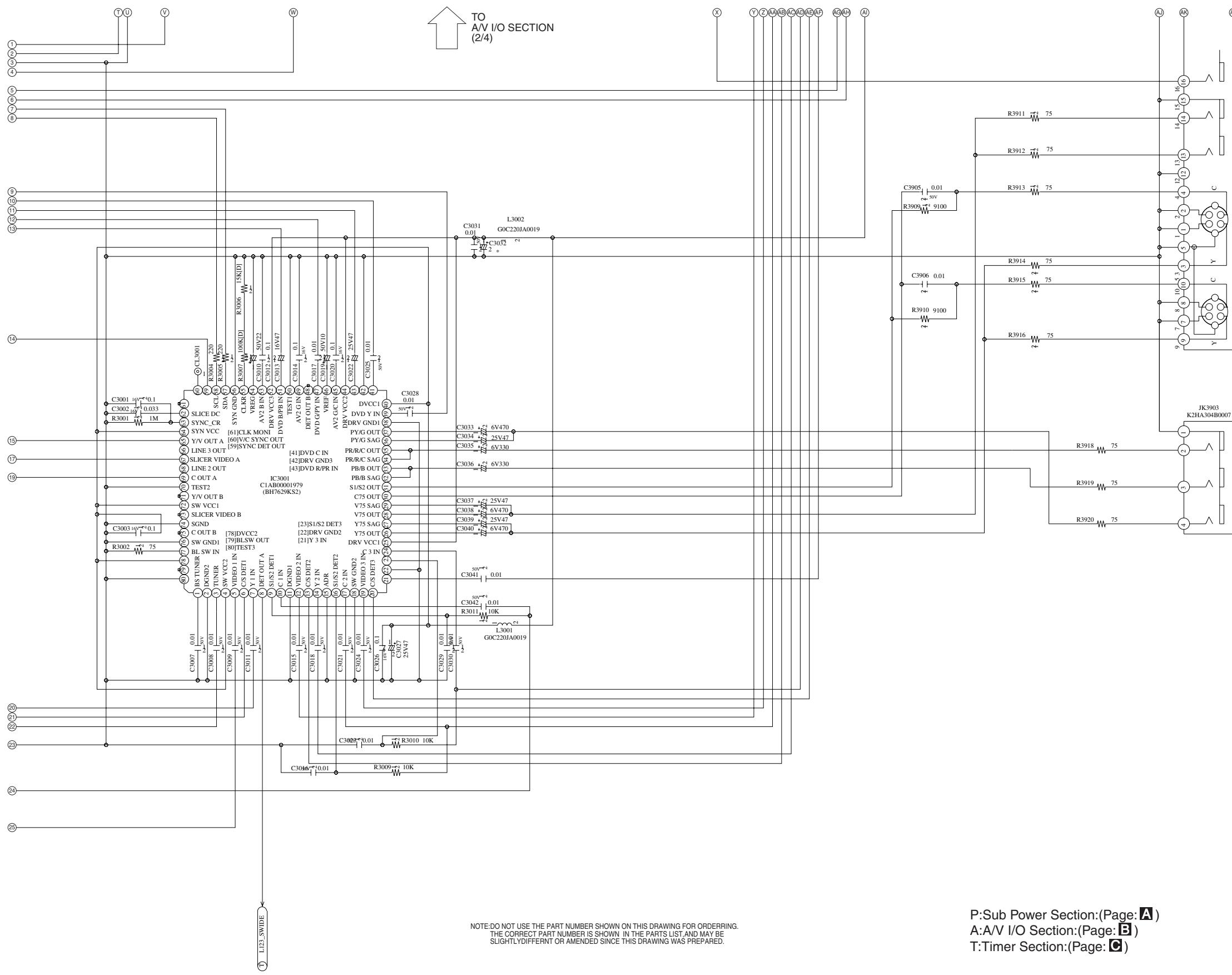


**DMR-EH55P9/PC9
A/V I/O(2/4) Section
(Main P.C.B.(2/3))
Schematic Diagram(A)**

13.6. A/V I/O (3/4) Section (Main P.C.B.(2/3)) Schematic Diagram (A)

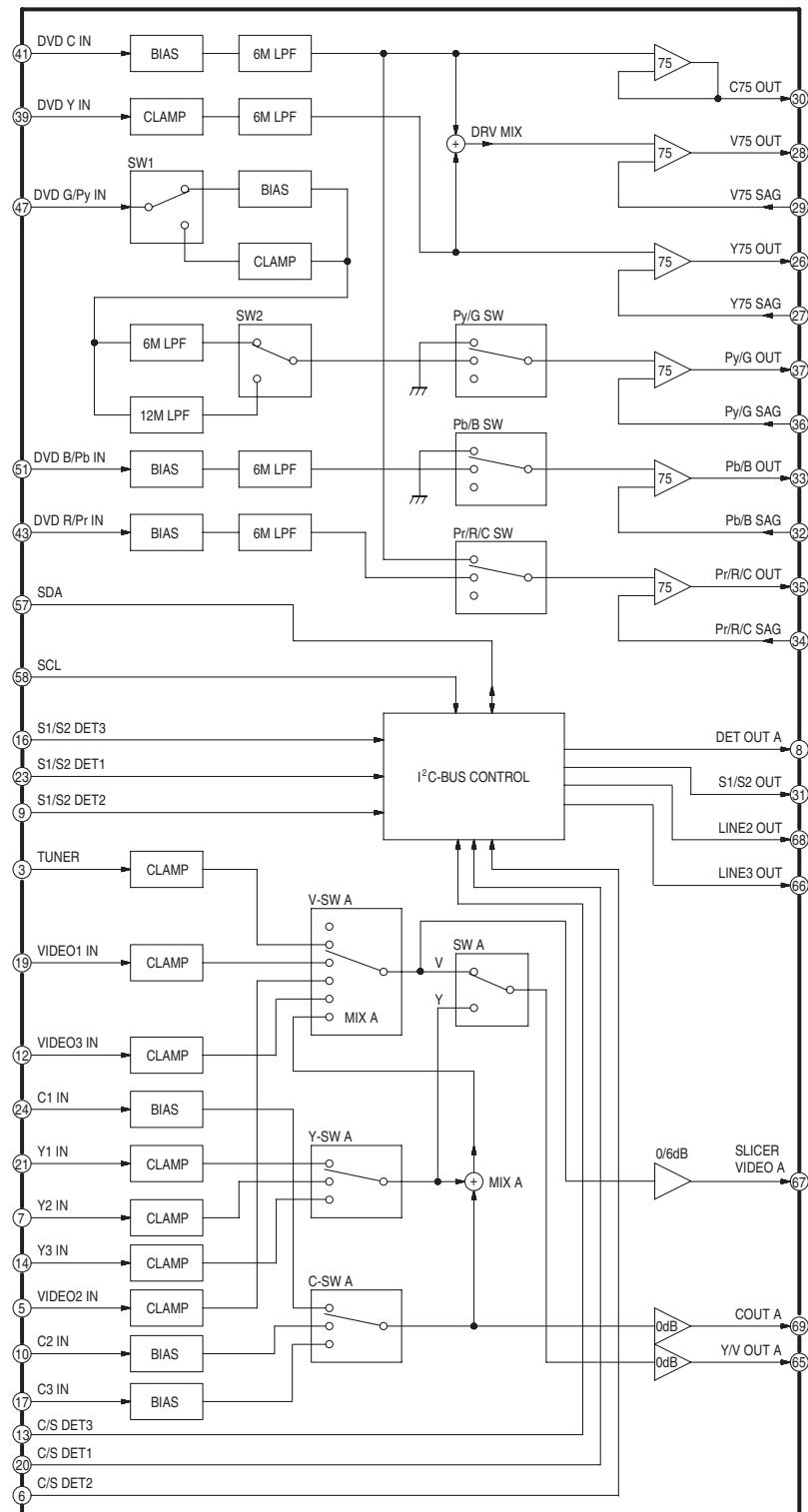


13.7. A/V I/O (4/4) Section (Main P.C.B.(2/3)) Schematic Diagram (A)

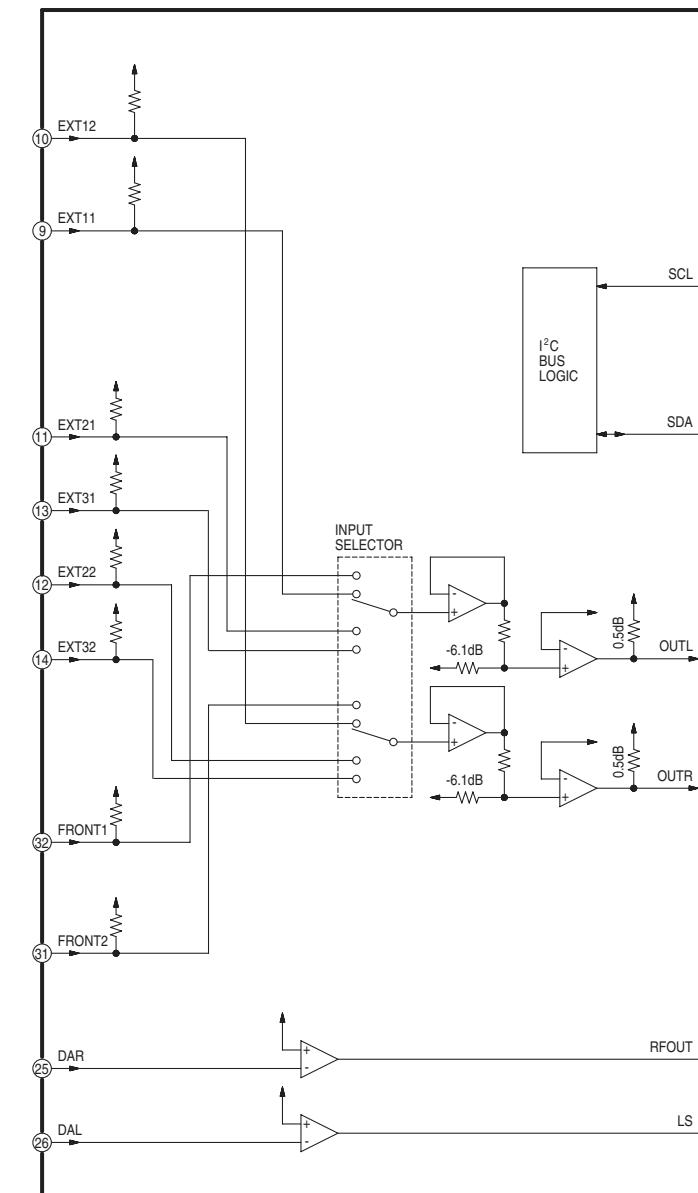
P:Sub Power Section:(Page: **A**)A:A/V I/O Section:(Page: **B**)T:Timer Section:(Page: **C**)

DMR-EH55P9/PC9
A/V I/O(4/4) Section
(Main P.C.B.(2/3))
Schematic Diagram(A)

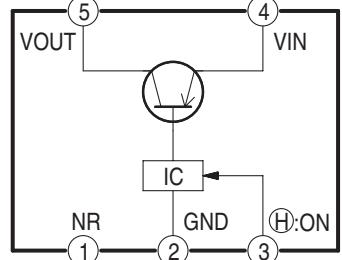
IC3001
VIDEO PROCESSOR
IC-DETAIL BLOCK DIAGRAM



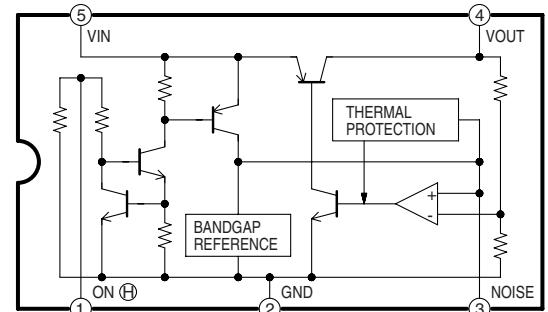
IC4001
AUDIO PROCESSOR
IC-DETAIL BLOCK DIAGRAM



IC4002
AU +5V SWITCHING REGULATOR
IC-DETAIL BLOCK DIAGRAM



IC4003
AU +9V SWITCHING REGULATOR
IC-DETAIL BLOCK DIAGRAM



IC3001 Detail Block Diagram

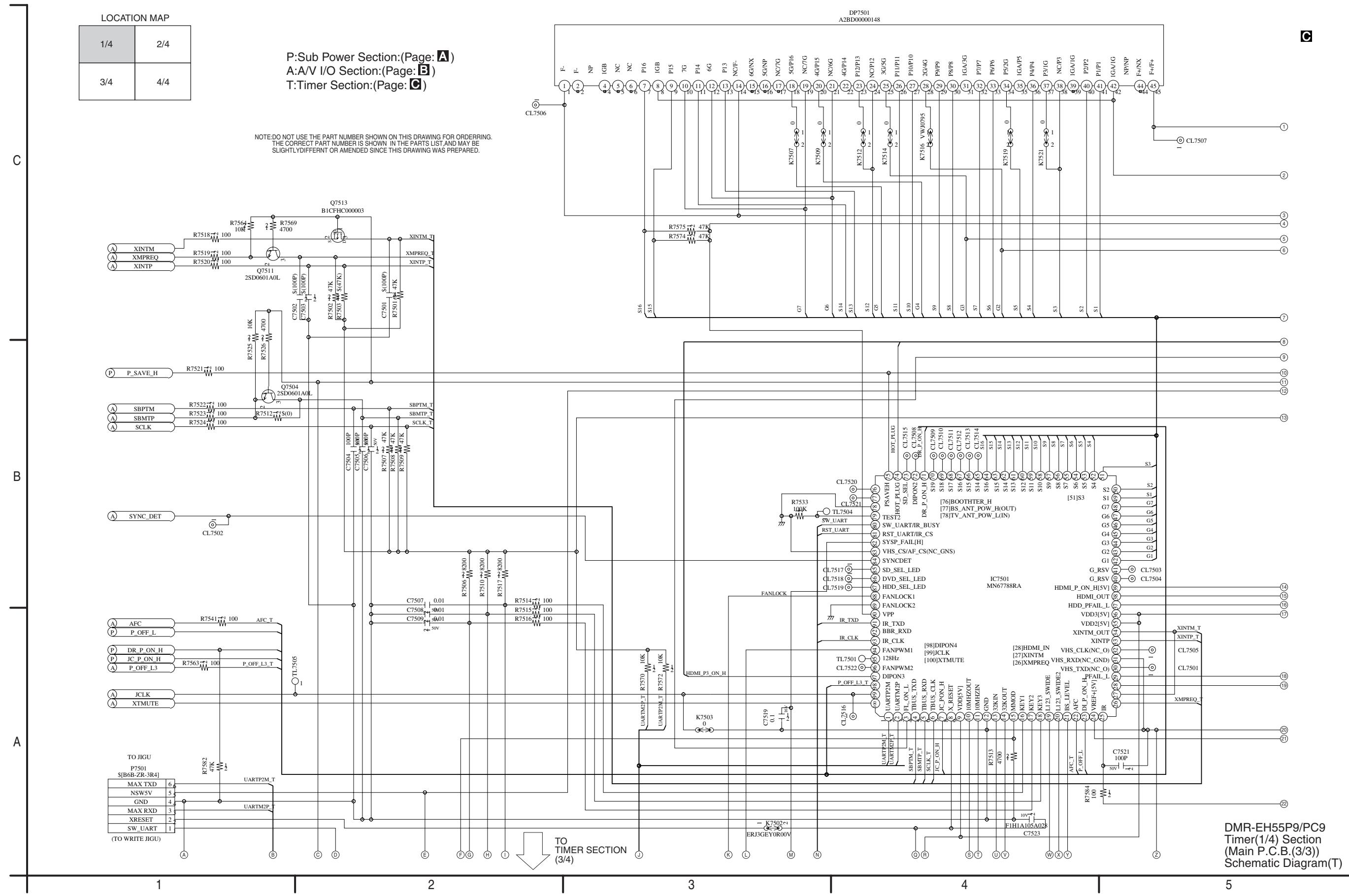
IC4001 Detail Block Diagram

IC4002 Detail Block Diagram

IC4003 Detail Block Diagram

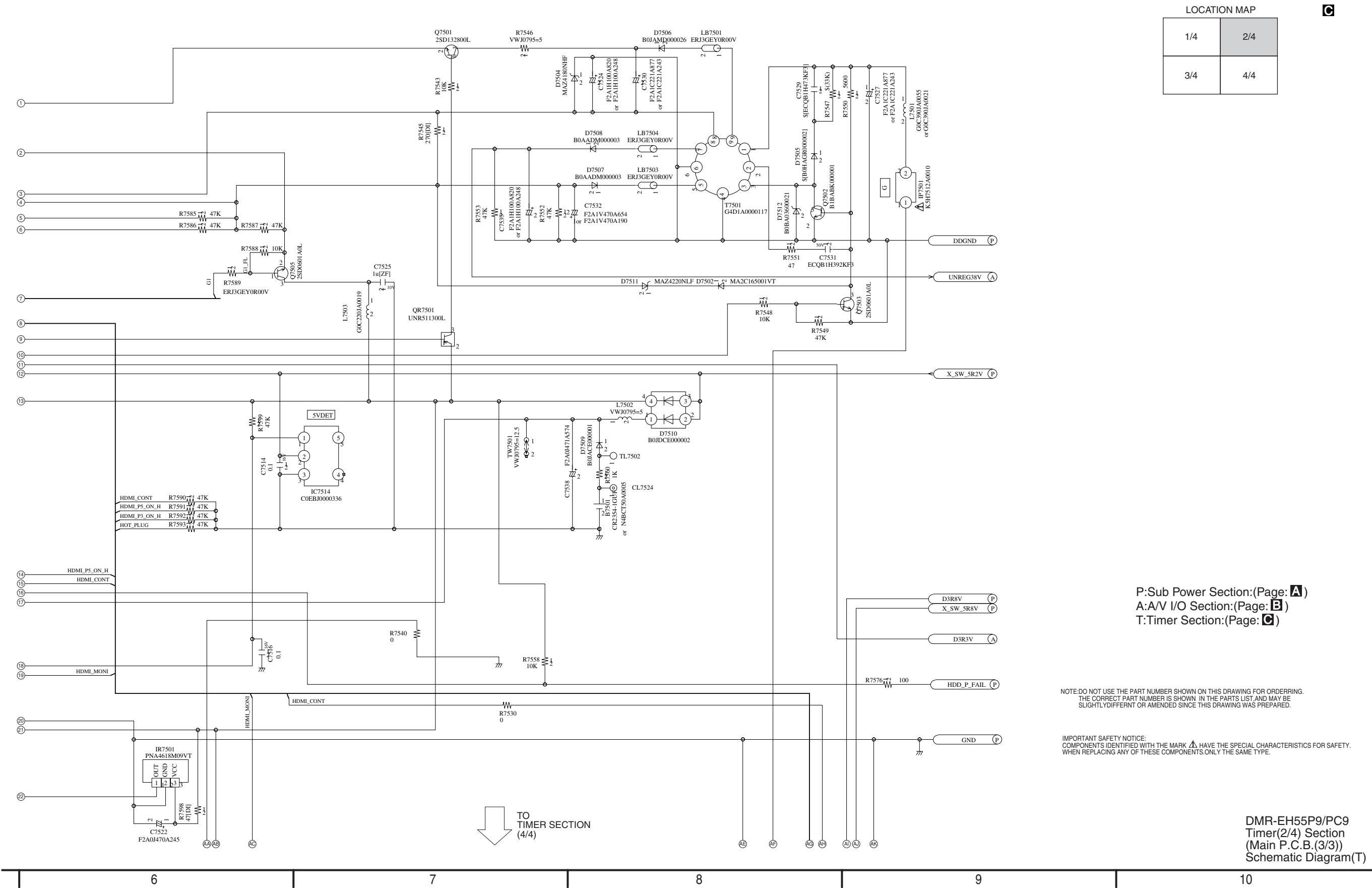
DMR-EH55P9/PC9 IC-Detail Block Diagram

13.8. Timer (1/4) Section (Main P.C.B.(3/3)) Schematic Diagram (F1)

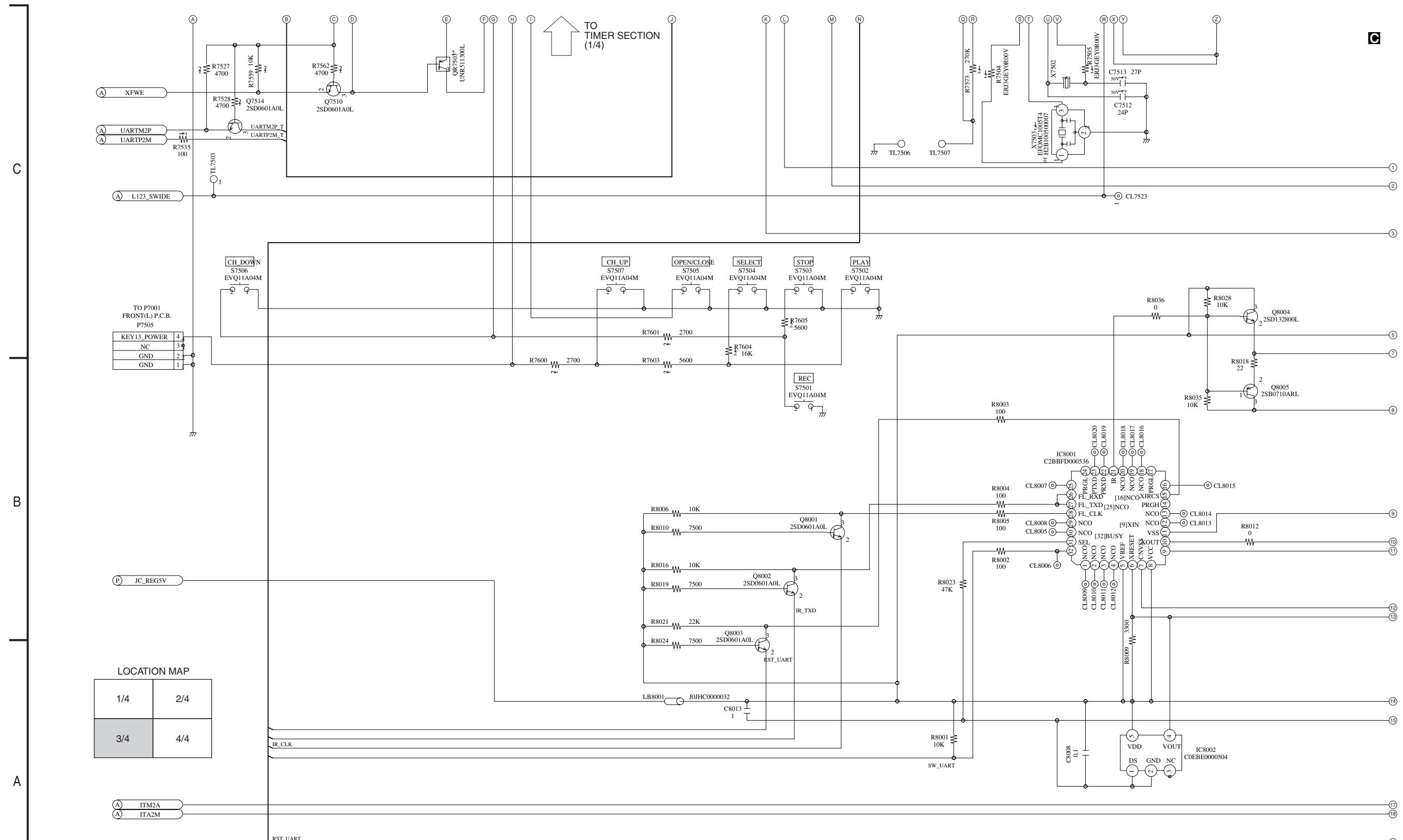


DMR-EH55P9/PC9
Timer(1/4) Section
(Main P.C.B.(3/3))
Schematic Diagram(T)

13.9. Timer (2/4) Section (Main P.C.B.(3/3)) Schematic Diagram (FL)



13.10. Timer (3/4) Section (Main P.C.B.(3/3)) Schematic Diagram (FL)



P:Sub Power Section:(Page: A)

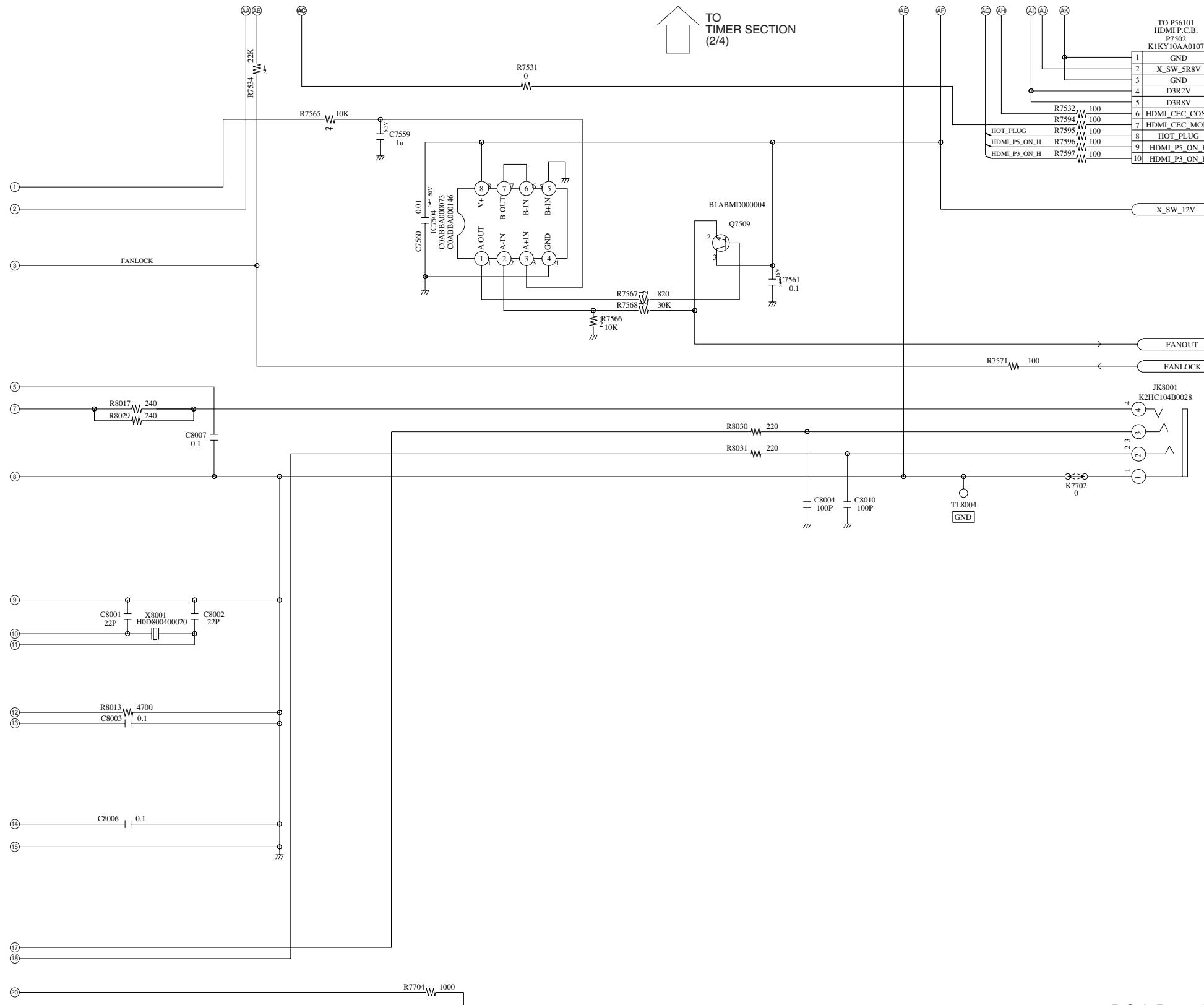
A:A/V I/O Section:(Page: B)

T:Timer Section:(Page: C)

NOTE: DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING.
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SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

DMR-EH55P9/PC9
Timer(3/4) Section
(Main P.C.B.(3/3))
Schematic Diagram(T)

13.11. Timer (4/4) Section (Main P.C.B.(3/3)) Schematic Diagram (FL)

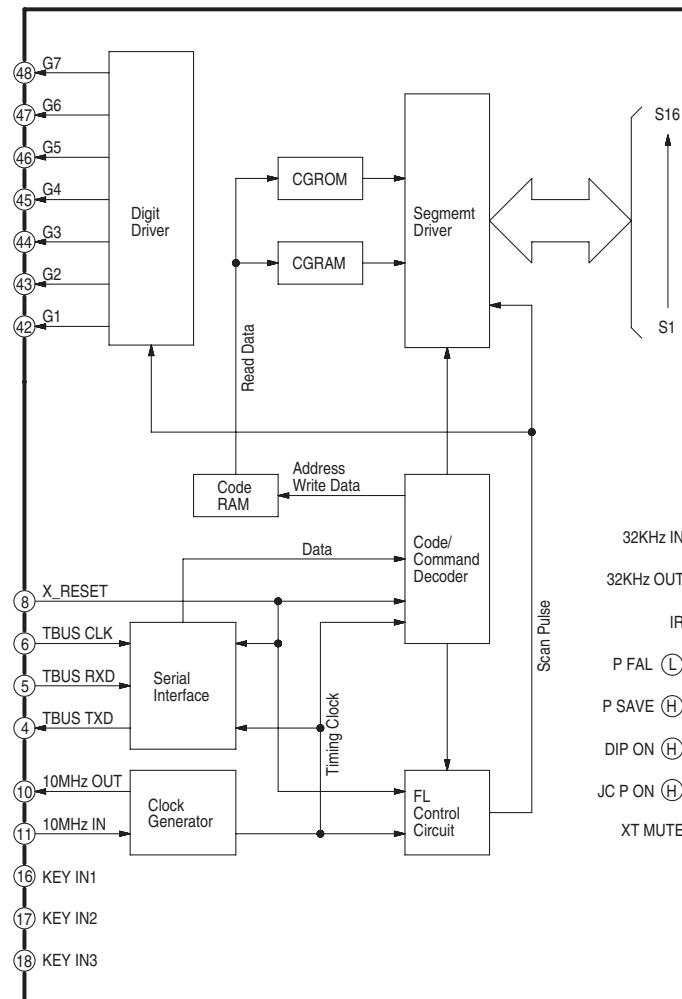


P:Sub Power Section:(Page:**A**)
A:A/V I/O Section:(Page:**B**)
T:Timer Section:(Page:**C**)

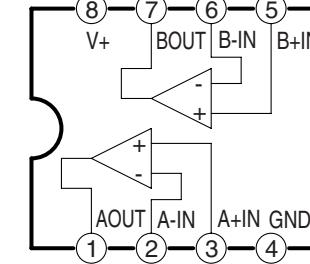
DMR-EH55P9/PC9
Timer(4/4) Section
(Main P.C.B.(3/3))
Schematic Diagram(T)

1/4	2/4
3/4	4/4

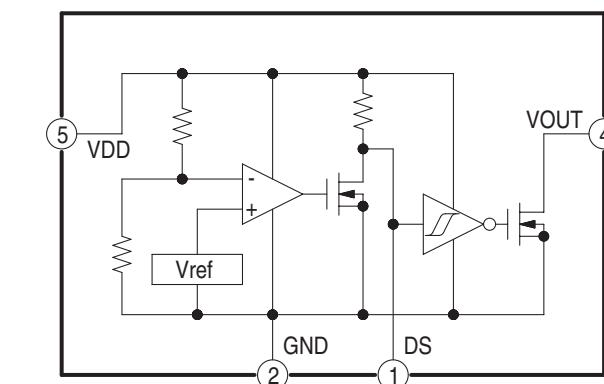
IC7501
TIMER
IC-DETAIL BLOCK DIAGRAM



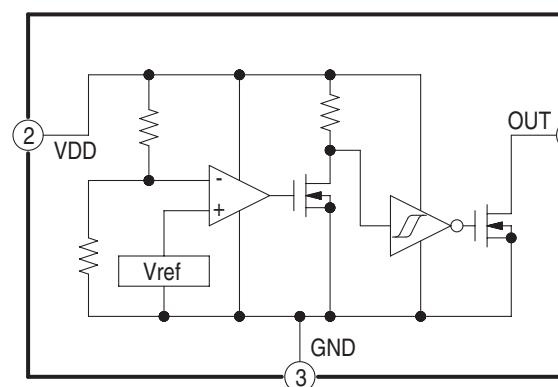
IC7504
FAN MOTOR DRIVE
IC-DETAIL BLOCK DIAGRAM



IC8002
RESET
IC-DETAIL BLOCK DIAGRAM

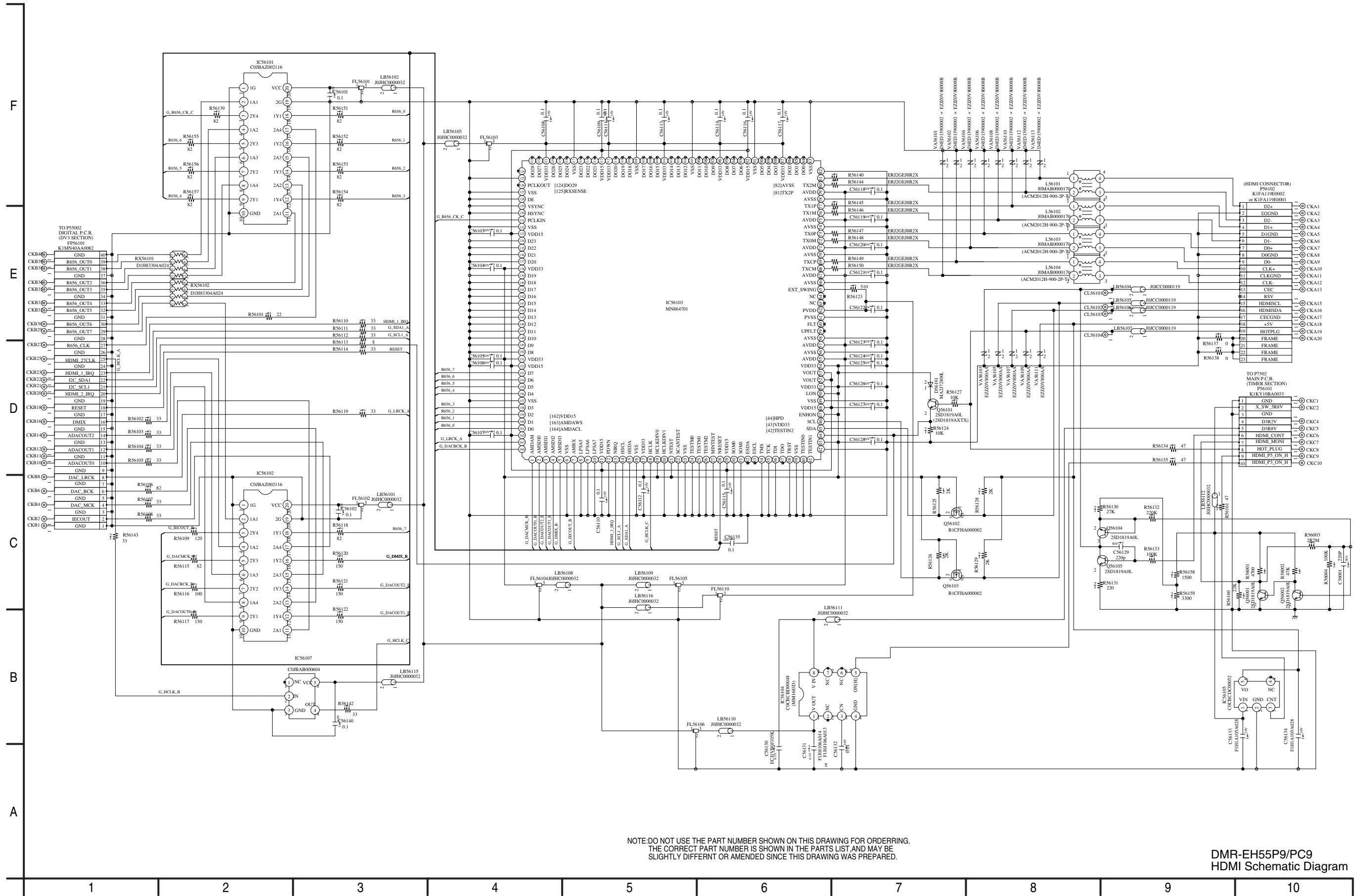


IC7514
RESET
IC-DETAIL BLOCK DIAGRAM



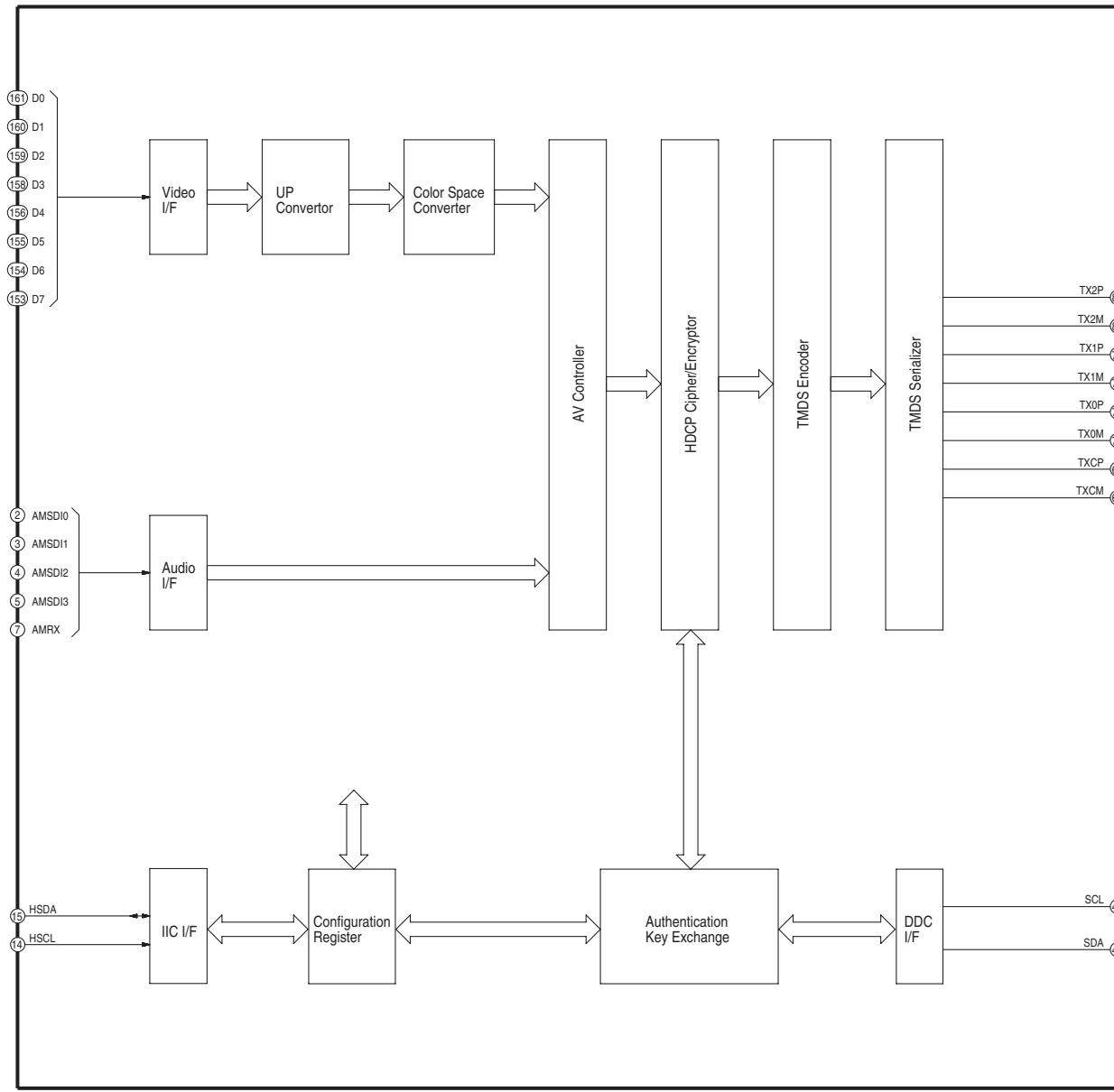
IC7501 Detail Block Diagram
IC7504 Detail Block Diagram
IC7514 Detail Block Diagram
IC8002 Detail Block Diagram
DMR-EH55P9/PC9 IC-Detail Block Diagram

13.12. HDMI Schematic Diagram

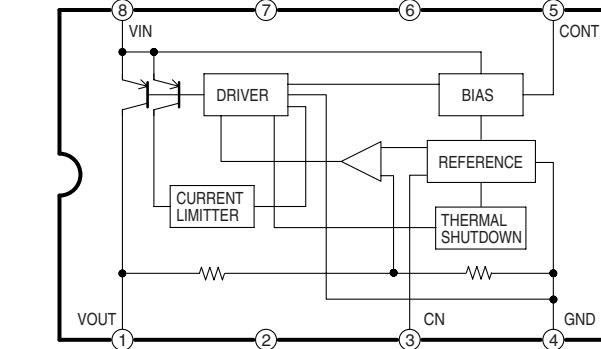


NOTE:DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING.
THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST,AND MAY BE
SLIGHTLY DIFFERNT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

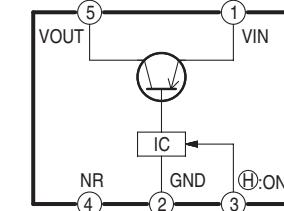
IC56103
HDMI TRANSMITTER
IC-DETAIL BLOCK DIAGRAM



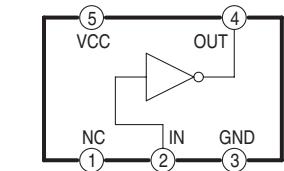
IC56104
+3.3V SWITCHING REG.
IC-DETAIL BLOCK DIAGRAM



IC56105
+5V SWITCHING REG.
IC-DETAIL BLOCK DIAGRAM



IC56107
INVERTER
IC-DETAIL BLOCK DIAGRAM



IC56103 Detail Block Diagram

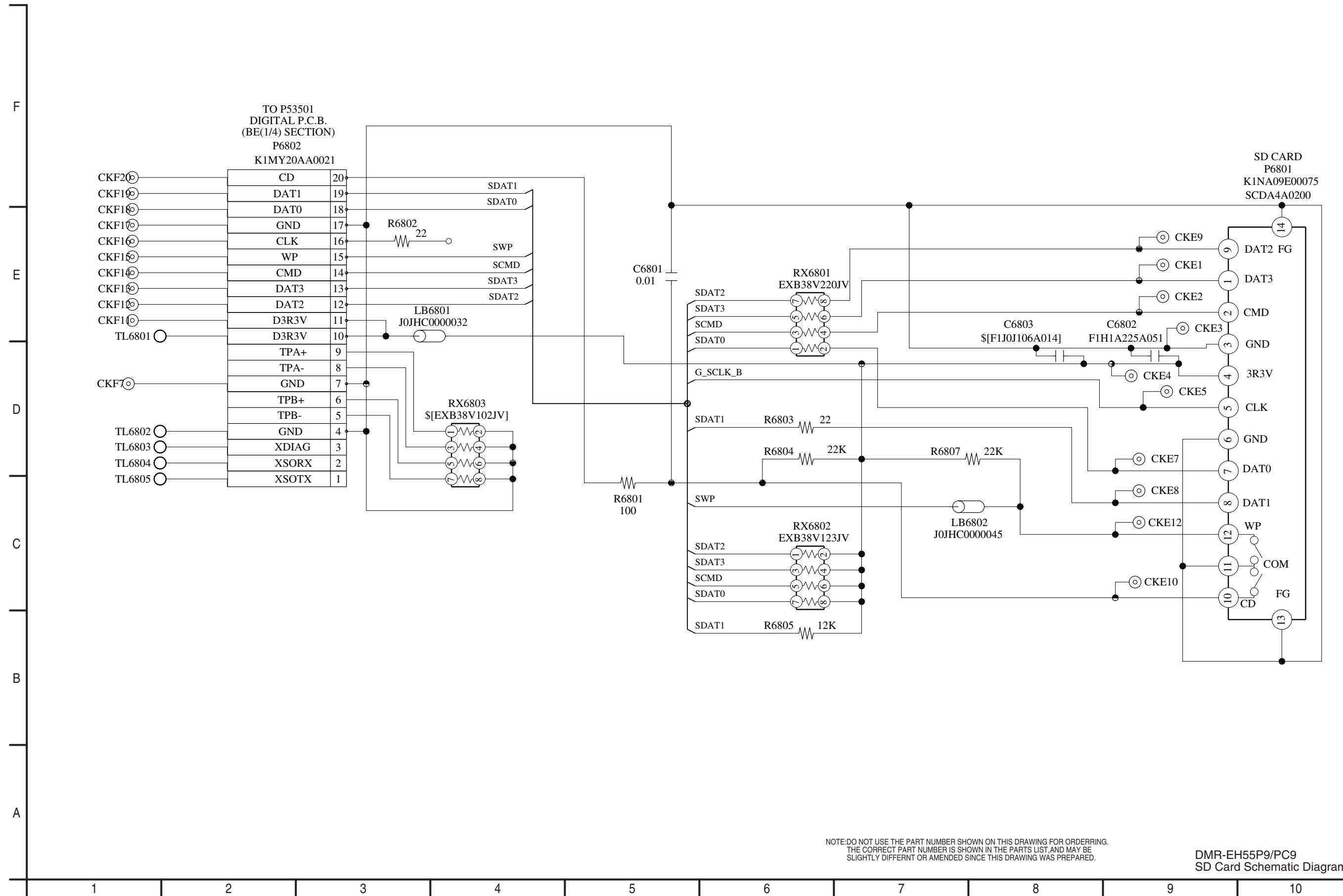
IC56104 Detail Block Diagram

IC56105 Detail Block Diagram

IC56107 Detail Block Diagram

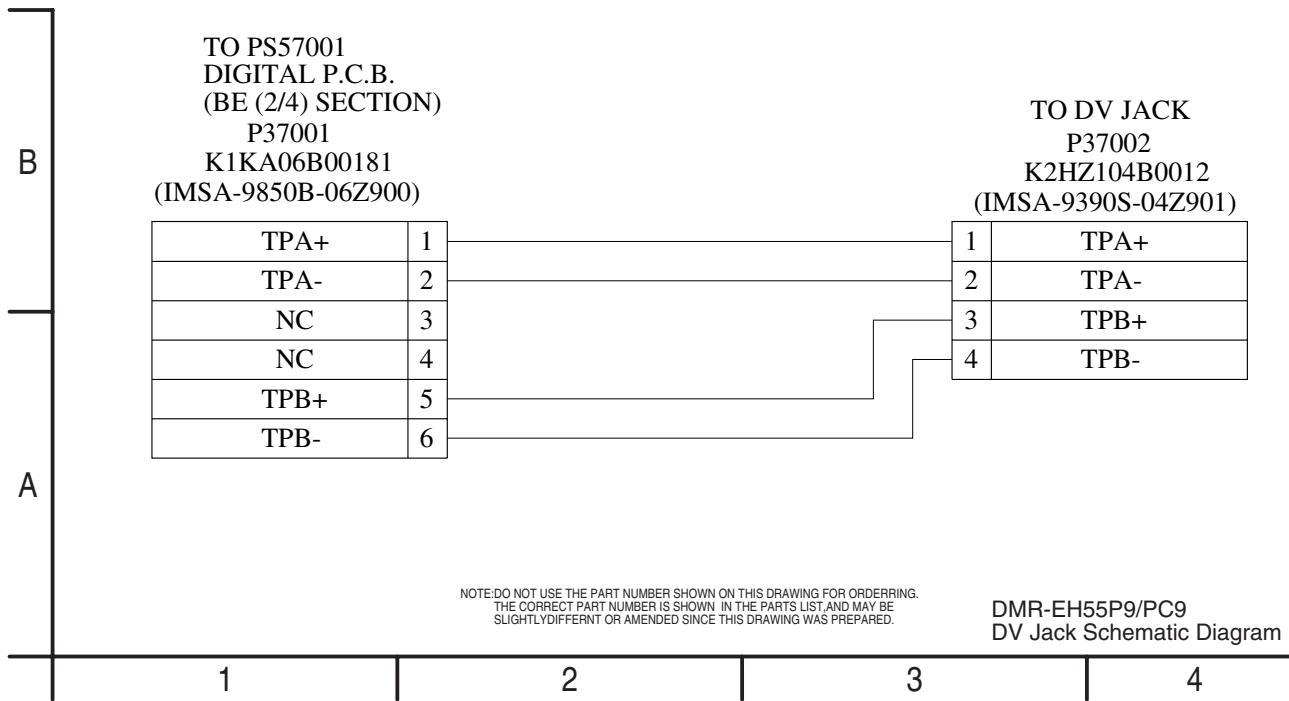
DMR-EH55P9/PC9 IC-Detail Block Diagram

13.13. SD Card Schematic Diagram

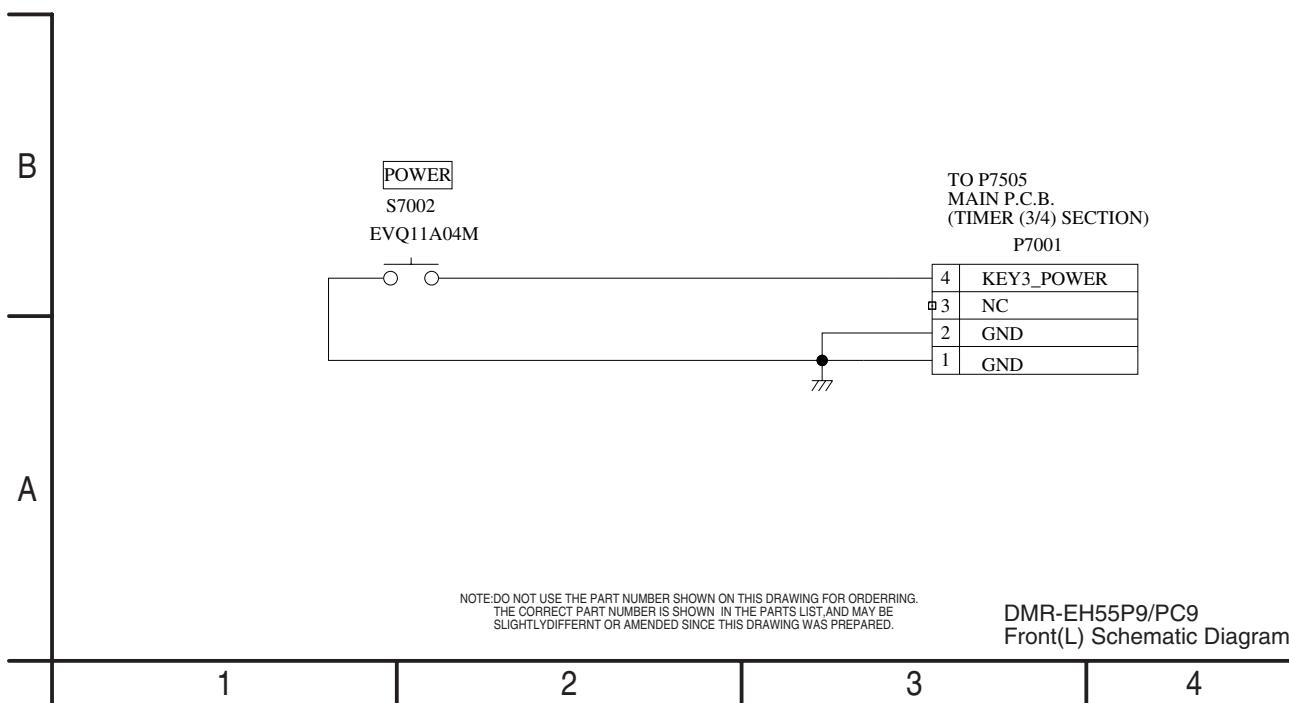


NOTE:DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING.
THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST,AND MAY BE
SLIGHTLY DIFFERNT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

13.14. DV Jack Schematic Diagram



13.15. Front (L) Schematic Diagram

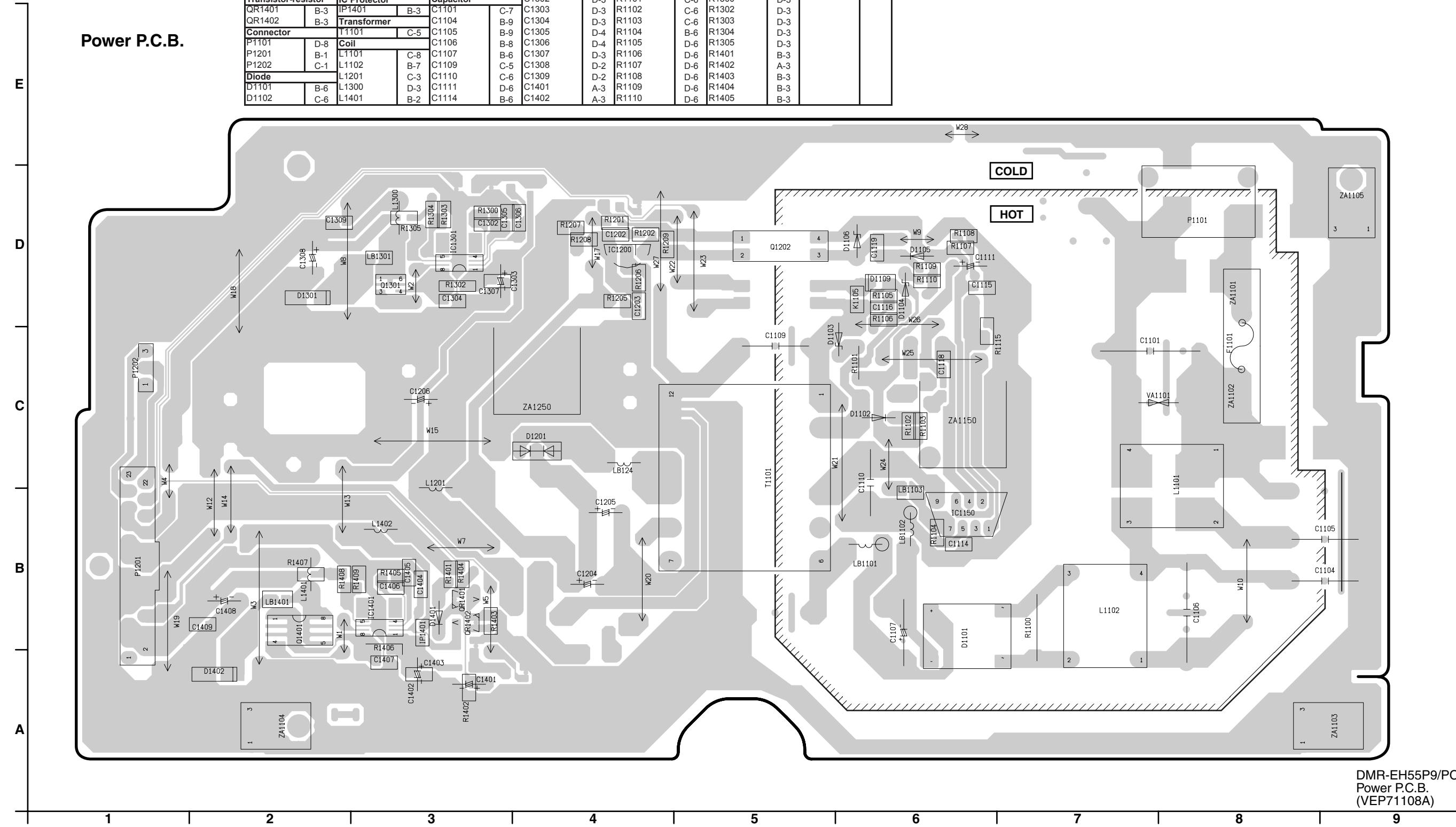


14 Print Circuit Board

14.1. Power P.C.B.

Power P.C.B.												
Integrated Circuit		D1103	C-6	L1402	B-3	C1115	D-6	C1403	A-3	R1109	D-6	R1406
IC1150	B-6	D1104	D-6	LB1101	B-6	C1116	D-6	C1404	B-3	R1115	C-7	R1407
IC1200	D-4	D1105	D-6	LB1102	B-6	C1118	C-6	C1405	B-3	R1201	D-4	R1408
IC1301	D-3	D1106	D-6	LB1103	B-6	C1119	D-6	C1406	B-3	R1202	D-4	R1409
IC1401	B-3	D1109	D-6	LB124	C-4	C1202	D-4	C1407	A-3	R1205	D-4	Varistor
Transistor		D1201	C-4	LB1301	D-3	C1203	D-4	C1408	B-2	R1206	D-4	VTA101
Q1202	D-5	D1301	D-2	LB1401	B-2	C1204	B-4	C1409	B-2	R1207	D-4	
Q1301	D-3	D1401	B-3	Fuse		C1205	B-4	Resistor		R1208	D-4	
Q1401	B-2	D1402	A-2	F1101	C-8	C1206	C-3	R1100	A-7	R1209	D-5	
Transistor-resistor		IC Protector		Capacitor		C1302	D-3	R1101	C-6	R1300	D-3	
QR1401	B-3	IP1401	B-3	C1101	C-7	C1303	D-3	R1102	C-6	R1302	D-3	
QR1402	B-3	Transformer		C1104	B-9	C1304	D-3	R1103	C-6	R1303	D-3	
Connector		T1101	C-5	C1105	B-9	C1305	D-4	R1104	B-6	R1304	D-3	
P1101	D-8	Coil		C1106	B-8	C1306	D-4	R1105	D-6	R1305	D-3	
P1201	B-1	L1101	C-8	C1107	B-6	C1307	D-3	R1106	D-6	R1401	B-3	
P1202	C-1	L1102	B-7	C1109	C-5	C1308	D-2	R1107	D-6	R1402	A-3	
Diode		L1201	C-3	C1110	C-6	C1309	D-2	R1108	D-6	R1403	B-3	
D1101	B-6	L1300	D-3	C1111	D-6	C1401	A-3	R1109	D-6	R1404	B-3	
D1102	C-6	L1401	B-2	C1114	B-6	C1402	A-3	R1110	D-6	R1405	B-3	

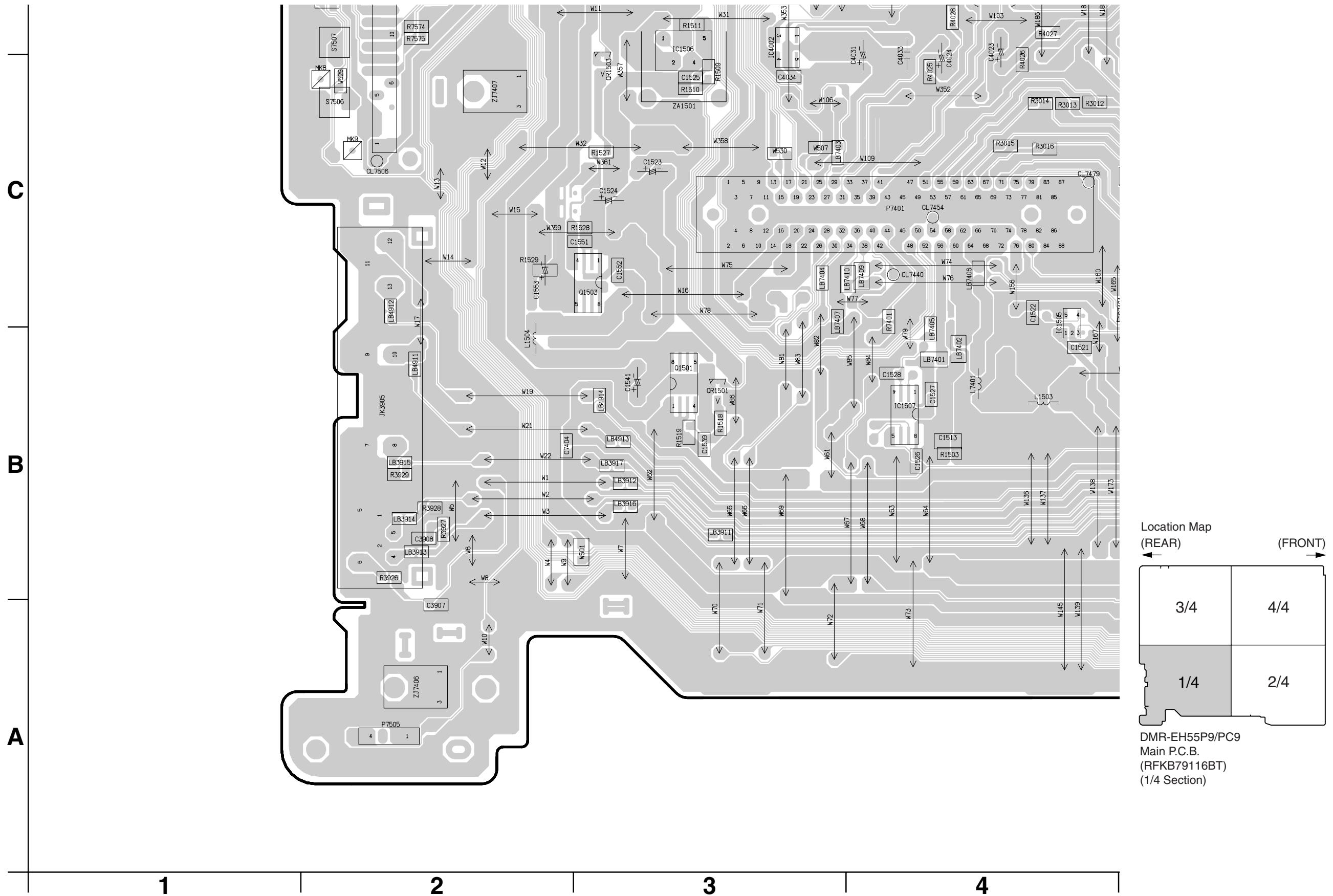
Power P.C.B.



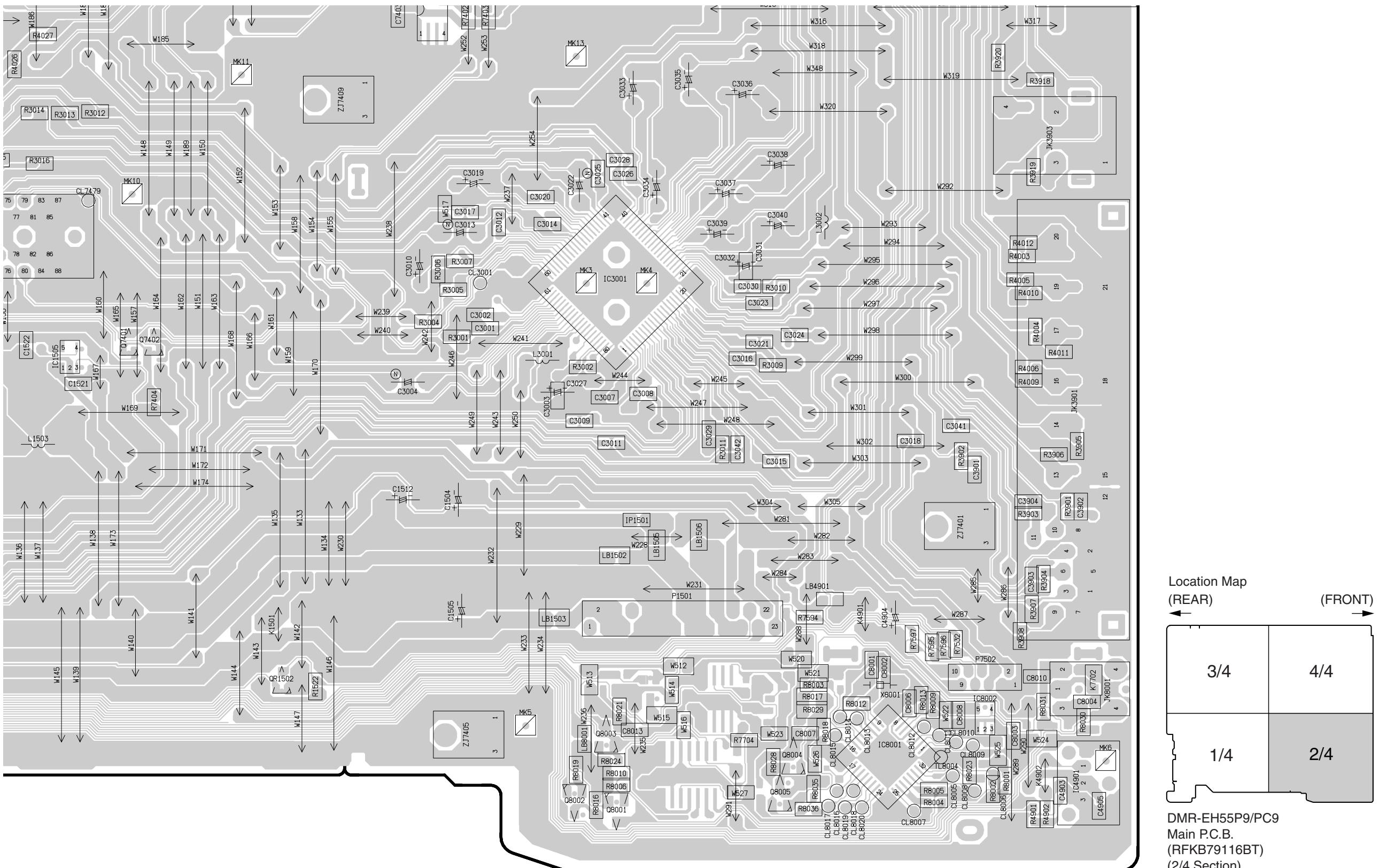
DMR-EH55P9/PC9
Power P.C.B.
(VEP71108A)

14.2. Main P.C.B.

14.2.1. Main P.C.B. (1/4 Section)



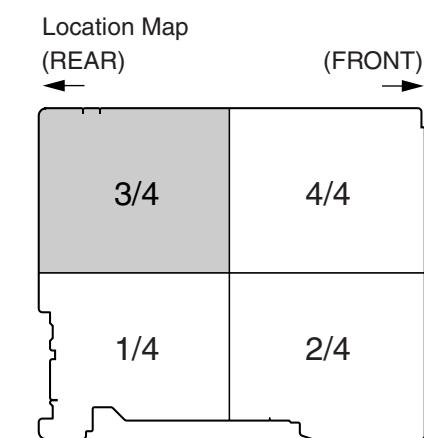
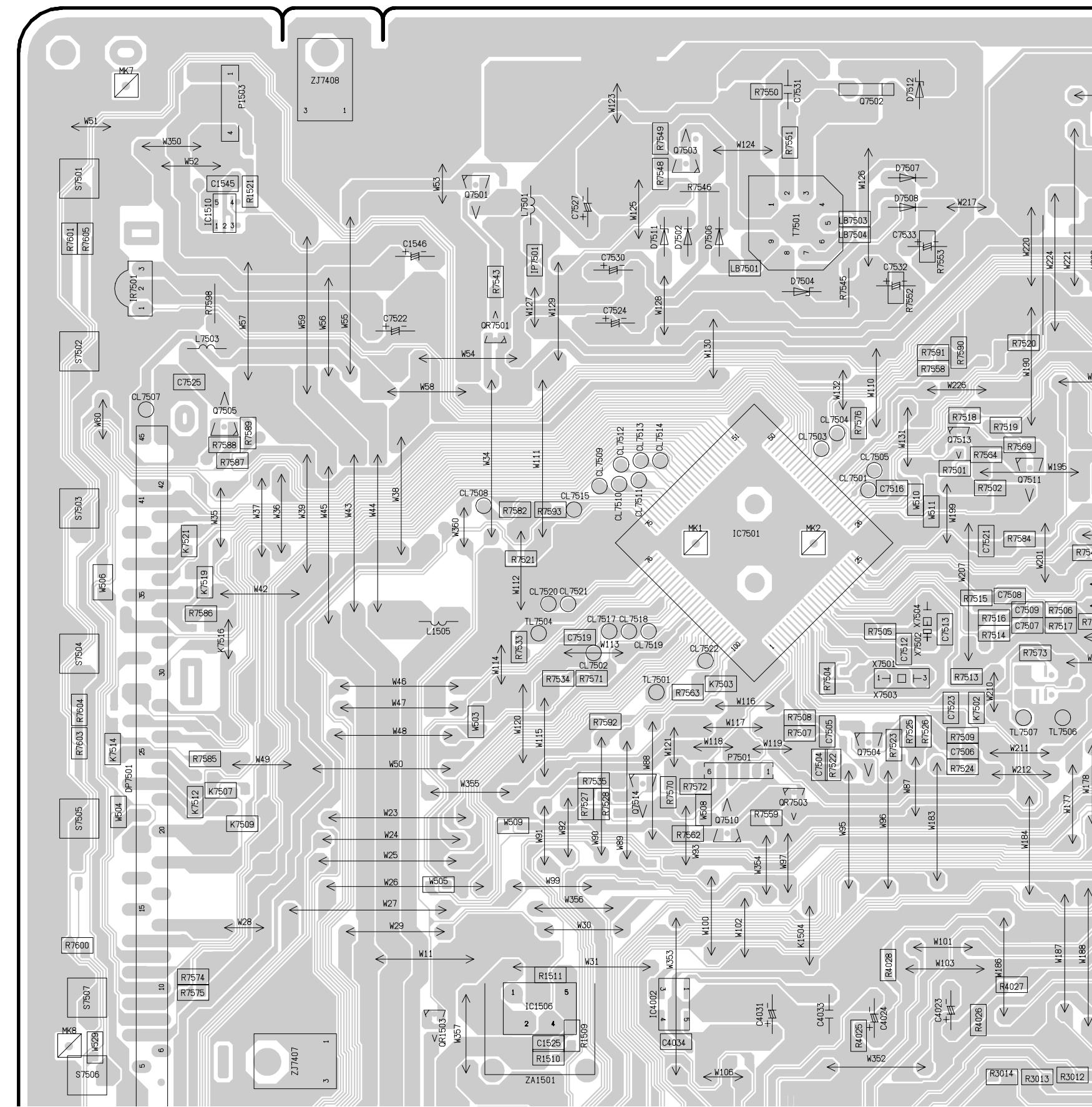
14.2.2. Main P.C.B. (2/4 Section)



DMR-EH55P9/PC9
Main P.C.B.
(RFKB79116BT)
(2/4 Section)

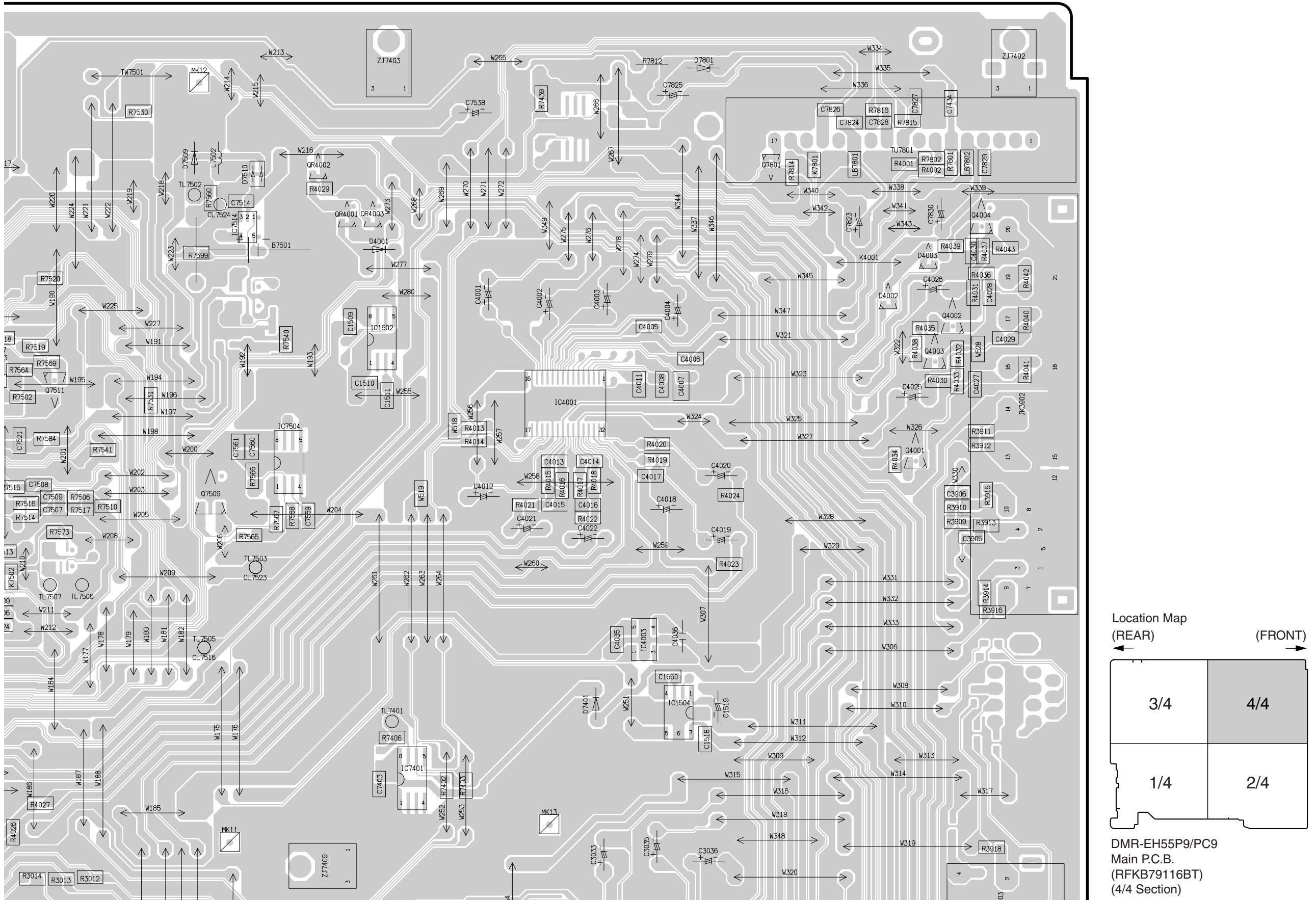
14.2.3. Main P.C.B. (3/4 Section)

Main P.C.B.

F**E****D**

DMR-EH55P9/PC9
Main P.C.B.
(RFKB79116BT)
(3/4 Section)

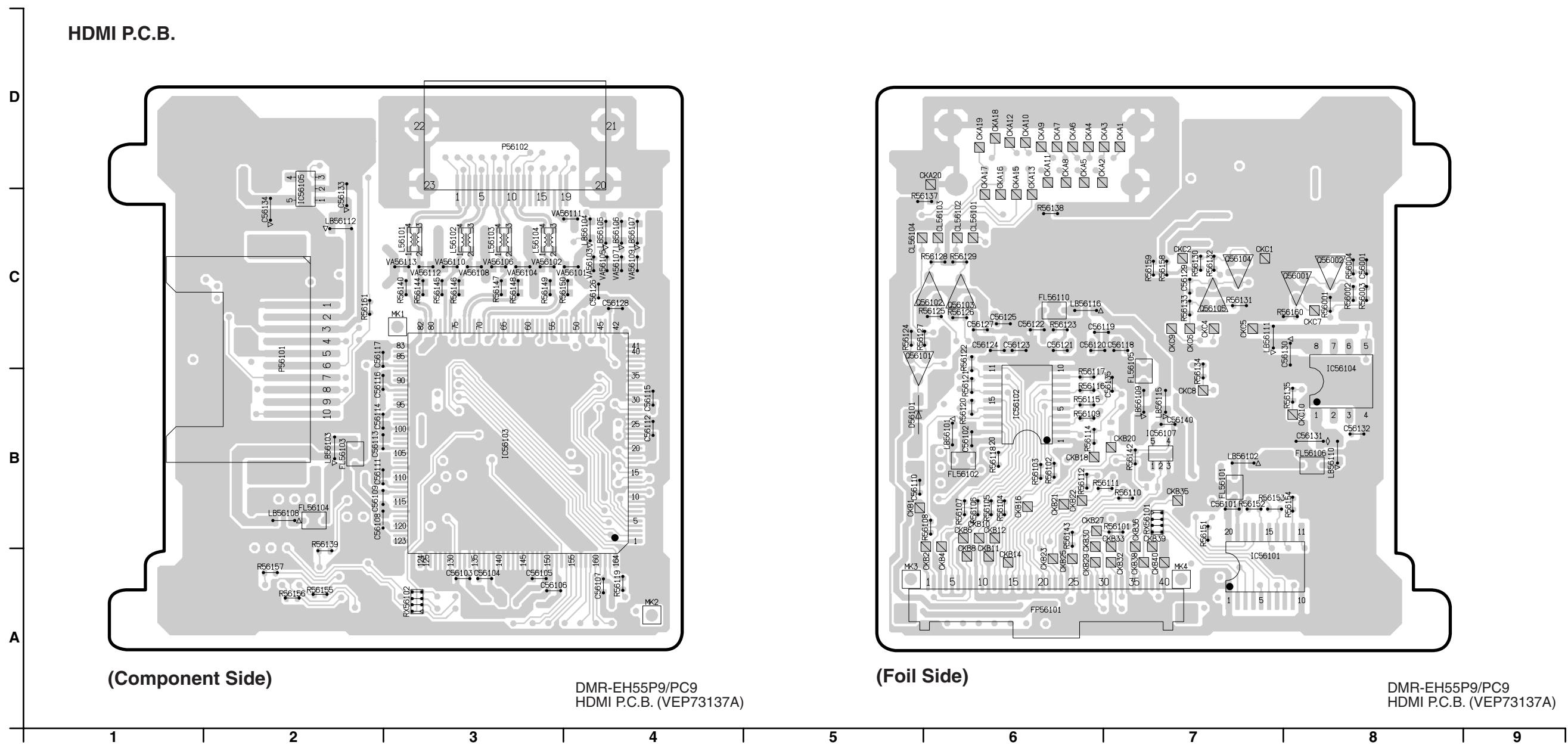
14.2.4. Main P.C.B. (4/4 Section)



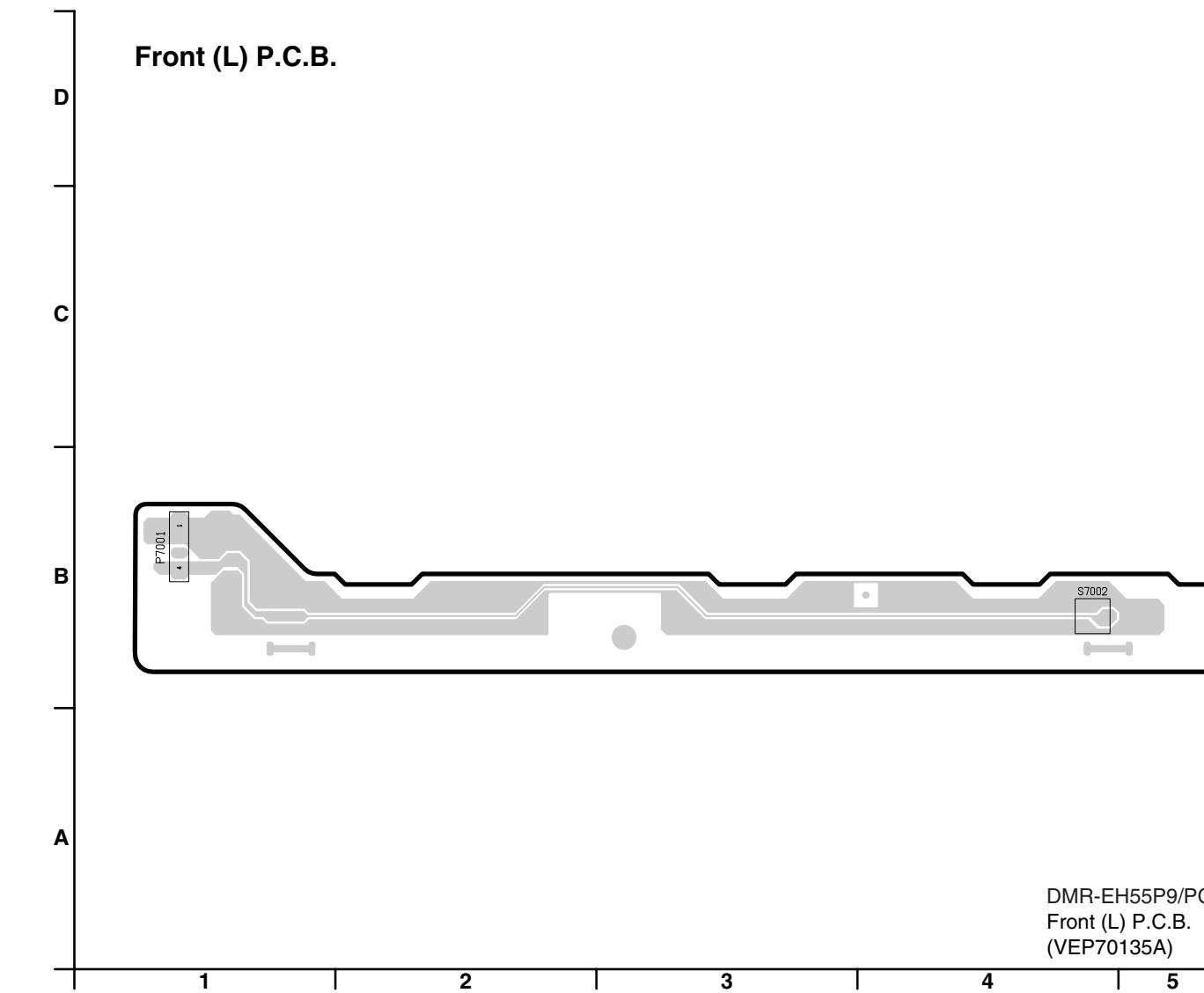
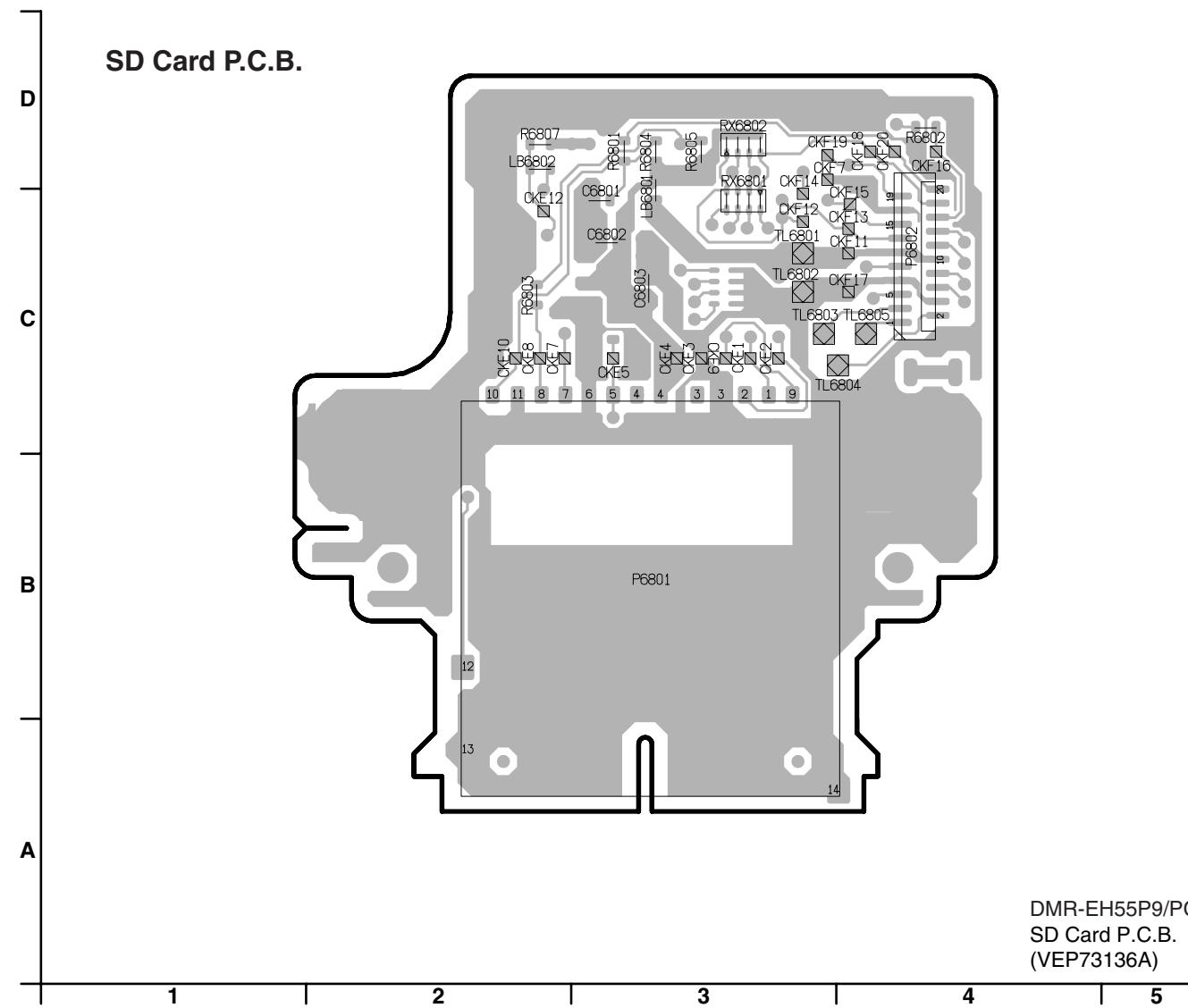
14.2.5. Main P.C.B. Address Information

Main P.C.B.																			
Integrated Circuit		CL7513	E-3	IC Protector		C1553	C-2	C4023	C-4	R1528	C-3	R4033	E-7	R7567	D-5	S7507	D-2		
IC1502	E-5	CL7514	E-3	IP1501	B-6	C3001	C-6	C4024	C-4	R1529	C-2	R4034	E-7	R7568	E-5	Transformer			
IC1504	D-7	CL7515	E-3	IP7501	F-3	C3002	C-6	C4025	E-7	R3001	C-6	R4035	E-7	R7569	E-4	T7501	F-4		
IC1505	B-4	CL7516	D-5	Coil		C3003	B-6	C4026	E-7	R3002	B-6	R4036	E-7	R7570	D-3	Battery			
IC1506	C-3	CL7517	E-3	L1503	B-4	C3004	B-5	C4027	E-7	R3004	C-6	R4037	E-7	R7571	D-3	B7501	E-5		
IC1507	B-4	CL7518	E-3	L1504	B-2	C3007	B-6	C4028	E-7	R3005	C-6	R4038	E-7	R7572	D-3	Display			
IC1510	F-2	CL7519	E-3	L1505	E-3	C3008	B-6	C4029	E-7	R3006	C-6	R4039	E-7	R7573	D-4	DP7501	D-2		
IC3001	C-6	CL7520	E-3	L3001	C-6	C3009	B-6	C4030	E-7	R3007	C-6	R4040	E-7	R7574	D-2	Remote IR			
IC4001	E-6	CL7521	E-3	L3002	C-7	C3010	C-6	C4031	C-4	R3009	B-7	R4041	E-7	R7575	C-2	IR7501	F-2		
IC4002	C-3	CL7522	D-3	L7401	B-4	C3011	B-6	C4033	C-4	R3010	C-7	R4042	E-7	R7576	E-4	Tuner			
IC4003	D-6	CL7523	D-5	L7501	F-3	C3012	C-6	C4034	C-3	R3011	B-7	R4043	E-7	R7582	E-3	TU7801	F-7		
IC4901	A-8	CL7524	F-5	L7502	F-5	C3013	C-6	C4035	D-6	R3012	C-4	R4901	A-7	R7584	E-4				
IC7401	D-6	CL8005	A-7	L7503	E-2	C3014	C-6	C4036	D-6	R3013	C-4	R4902	A-7	R7585	D-2				
IC7501	E-4	CL8006	A-7	LB1502	B-6	C3015	B-7	C4904	B-7	R3014	C-4	R7401	B-4	R7586	E-2				
IC7504	E-5	CL8007	A-7	LB1503	B-6	C3016	B-7	C4905	A-7	R3015	C-4	R7402	D-6	R7587	E-2				
IC7514	F-5	CL8008	A-7	LB1505	B-6	C3017	C-6	C7403	D-5	R3016	C-4	R7403	D-6	R7588	E-2				
IC8001	A-6	CL8009	A-7	LB1506	B-6	C3018	B-7	C7404	B-3	R3901	B-7	R7404	B-5	R7589	E-2				
IC8002	A-6	CL8010	A-7	LB3911	B-3	C3019	C-6	C7504	D-4	R3902	B-7	R7406	D-6	R7590	E-4				
Transistor		CL8011	A-7	LB3912	B-3	C3020	C-6	C7505	D-4	R3903	B-7	R7439	F-6	R7591	E-4				
Q1501	B-3	CL8012	A-7	LB3913	B-2	C3021	C-7	C7506	D-4	R3904	B-7	R7501	E-4	R7592	D-3				
Q1503	C-3	CL8013	A-7	LB3914	B-2	C3022	C-6	C7507	E-4	R3905	B-7	R7502	E-4	R7593	E-3				
Q4001	E-7	CL8014	A-7	LB3915	B-2	C3023	C-7	C7508	E-4	R3906	B-7	R7504	D-4	R7594	B-6				
Q4002	E-7	CL8015	A-7	LB3916	B-3	C3024	C-7	C7509	E-4	R3907	B-7	R7505	E-4	R7595	A-6				
Q4003	E-7	CL8016	A-7	LB3917	B-3	C3025	C-6	C7512	D-4	R3908	B-7	R7506	E-4	R7596	A-6				
Q4004	F-7	CL8017	A-7	LB4901	B-7	C3026	C-6	C7513	E-4	R3909	D-7	R7507	D-4	R7597	B-6				
Q7401	C-5	CL8018	A-7	LB4911	B-2	C3027	B-6	C7514	F-5	R3910	E-7	R7508	D-4	R7598	E-2				
Q7402	C-5	CL8019	A-7	LB4912	B-2	C3028	C-6	C7516	E-4	R3911	E-7	R7509	D-4	R7599	E-5				
Q7501	F-3	CL8020	A-7	LB4913	B-3	C3029	B-7	C7519	D-3	R3912	E-7	R7510	E-5	R7600	D-2				
Q7502	F-4	TL7401	D-5	LB4914	B-3	C3030	C-7	C7521	E-4	R3913	D-7	R7513	D-4	R7601	F-2				
Q7503	F-3	TL7501	D-3	LB7401	B-4	C3031	C-7	C7522	E-2	R3914	D-7	R7514	E-4	R7603	D-2				
Q7504	D-4	TL7502	F-5	LB7402	B-4	C3032	C-7	C7523	D-4	R3915	E-7	R7515	E-4	R7604	D-2				
Q7505	E-2	TL7503	D-5	LB7403	C-4	C3033	C-6	C7524	E-3	R3916	D-7	R7516	E-4	R7605	F-2				
Q7509	E-5	TL7504	E-3	LB7404	C-3	C3034	C-6	C7525	E-2	R3918	C-6	R7517	E-4	R7704	A-7				
Q7510	D-3	TL7505	D-5	LB7405	B-4	C3035	C-6	C7527	F-3	R3919	C-6	R7518	E-4	R7801	F-7				
Q7511	E-4	TL7506	D-4	LB7406	C-4	C3036	C-7	C7530	F-3	R3920	C-6	R7519	E-4	R7802	F-7				
Q7513	E-4	TL7507	D-4	LB7407	B-4	C3037	C-7	C7531	F-4	R3926	B-2	R7520	E-4	R7812	F-6				
Q7514	D-3	TL8004	A-7	LB7409	C-4	C3038	C-7	C7532	F-4	R3927	B-2	R7521	E-3	R7814	F-7				
Connector		LB7410	C-4	C3039	C-6	C7533	F-4	R3928	B-2	R7522	D-4	R7815	F-7						
Q8001	A-5	JK3901	B-8	LB7501	F-4	C3040	C-7	C7538	F-6	R3929	B-2	R7523	D-4	R7816	F-6				
Q8002	A-5	JK3902	E-8	LB7503	F-4	C3041	B-7	C7559	E-5	R4001	F-7	R7524	D-4	R8001	A-7				
Q8003	A-5	JK3903	C-8	LB7504	F-4	C3042	B-7	C7560	E-5	R4002	F-7	R7525	D-4	R8002	A-6				
Q8004	A-6	JK3905	B-2	LB7801	F-7	C3901	B-7	C7561	E-5	R4003	C-7	R7526	D-4	R8003	A-6				
Q8005	A-6	JK8001	P1501	B-6	LB8001	A-5	C3903	B-7	C7823	F-7	R4004	C-7	R7527	D-3	R8004	A-6			
Transistor-resistor		P1503	F-2	Capacitor		C1504	B-6	C3904	B-7	C7825	F-6	R4006	B-7	R7530	F-4	R8006	A-5		
QR1501	B-3	P7401	C-4	C1505	B-6	C3905	D-7	C7826	F-7	R4009	B-7	R7531	E-4	R8009	A-6				
QR1502	A-5	P7402	C-4	C1506	A-7	C3906	E-7	C7827	F-7	R4010	C-7	R7532	B-6	R8010	A-5				
QR1503	C-3	P7502	F-5	C1507	A-2	C3907	E-5	C7828	F-7	R4011	B-7	R7533	D-3	R8012	A-6				
QR4001	F-5	Diode		D4001	E-5	C1510	E-5	C3908	B-2	C7829	F-7	R4012	C-7	R7534	D-3	R8013	A-6		
QR4003	F-5	D4002	E-7	C1511	E-6	C4001	E-6	C7830	F-7	R4013	E-6	R7535	D-3						

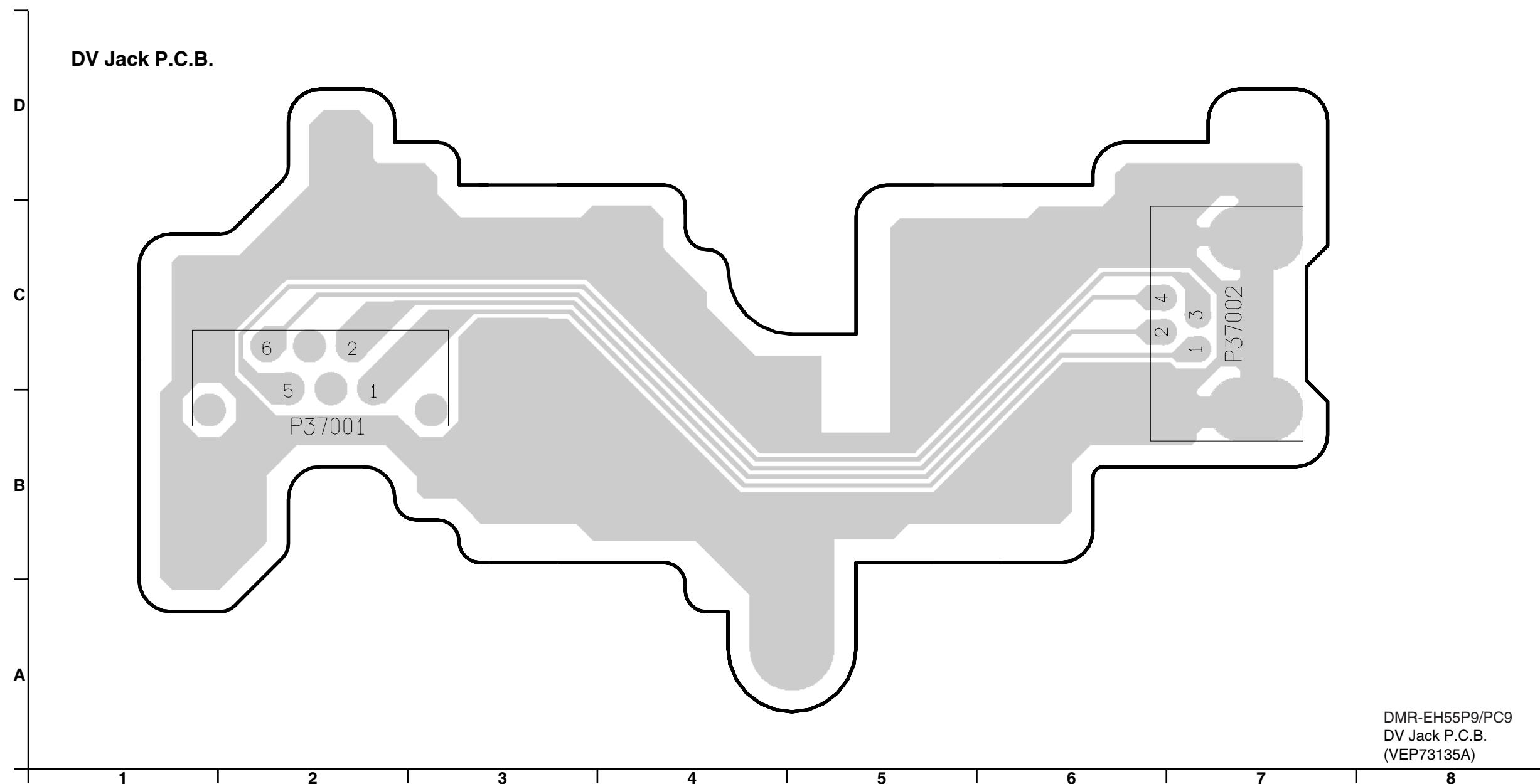
14.3. HDMI P.C.B.



14.4. SD Card P.C.B., Front (L) P.C.B.



14.5. DV Jack P.C.B.



15 Appendix for Schematic Diagram

15.1. Voltage and Waveform Chart

Note)

Circuit voltage and waveform described herein shall be regarded as reference information when probing defect point, because it may differ from an actual measuring value due to difference of Measuring instrument and its measuring condition and product itself.

15.1.1. Power P.C.B.

15.1.2. Main P.C.B.

Ref No.	IC1502								IC1504												
	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7						
MODE	REC	5.2	-	3.4	0	6.1	-	-	6.1	5.0	-	0	3.2	4.9	0	6.1					
PLAY	REC	5.2	-	3.4	0	6.1	-	-	6.1	5.0	-	0	3.2	4.9	0	6.1					
STOP	REC	5.2	-	3.4	0	6.1	-	-	6.1	5.0	-	0	3.2	4.9	0	6.1					
Ref No.	IC1505								IC1506												
	1	2	3	4	5	1	2	3	4	5											
MODE	REC	6.1	0	4.9	-	5.0	4.9	6.1	0	5.1	5.1										
PLAY	REC	6.1	0	4.9	-	5.0	4.9	6.1	0	5.1	5.1										
STOP	REC	6.1	0	4.9	-	5.0	4.9	6.1	0	5.1	5.1										
Ref No.	IC1507								IC1510												
	1	2	3	4	5	6	7	8	1	2	3	4	5								
MODE	REC	3.3	-	3.2	0	4.9	-	-	4.0	-	0	0	5.0	5.0							
PLAY	REC	3.3	-	3.2	0	4.9	-	-	4.0	-	0	0	5.0	5.0							
STOP	REC	3.3	-	3.2	0	4.9	-	-	4.0	-	0	0	5.0	5.0							
Ref No.	IC3001								IC3001												
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
MODE	REC	1.4	0	2.0	5.0	1.4	4.9	1.4	4.7	0.1	2.7	0	1.4	4.9	1.4	0	0.1	2.7	0	1.8	4.9
PLAY	REC	1.4	0	2.0	5.0	1.4	4.9	1.4	4.7	0.1	2.7	0	1.4	4.9	1.4	0	0.1	2.7	0	1.8	4.9
STOP	REC	1.4	0	2.0	5.0	1.4	4.9	1.4	4.7	0.1	2.7	0	1.4	4.9	1.4	0	0.1	2.7	0	1.8	4.9
Ref No.	IC3001								IC3001												
	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	
MODE	REC	1.4	0	0.1	2.7	4.9	1.7	1.8	1.9	1.9	2.2	0	2.2	2.2	2.2	2.2	1.7	1.7	0	1.8	5.0
PLAY	REC	1.4	0	0.1	2.7	4.9	1.7	1.8	1.9	1.9	2.2	0	2.2	2.2	2.2	2.2	1.7	1.7	0	1.8	5.0
STOP	REC	1.4	0	0.1	2.7	4.9	1.8	1.8	1.9	1.9	2.2	0	2.2	2.2	2.2	2.2	1.7	1.7	0	1.8	5.0
Ref No.	IC3001								IC3001												
	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	
MODE	REC	2.8	0	2.8	4.9	2.8	2.8	1.8	4.7	2.8	0	2.8	4.9	2.8	2.9	1.1	0	5.1	5.1	5.1	0.1
PLAY	REC	2.8	0	2.8	4.9	2.8	2.8	1.8	4.7	2.8	0	2.8	4.9	2.8	2.9	1.1	0	5.1	5.1	5.1	0.1
STOP	REC	2.8	0	2.8	4.9	2.8	2.8	1.8	4.7	2.8	0	2.8	4.9	2.8	2.9	1.1	0	5.1	5.1	5.1	0.1
Ref No.	IC3001								IC3001												
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	
MODE	REC	0	0.8	0.8	5.0	1.3	0	1.8	0	2.0	0	0.1	5.0	0.1	0	0.1	0	0	5.0	0	0
PLAY	REC	0	0.8	0.8	5.0	1.3	0	1.8	0	2.0	0	0.1	5.0	0.1	0	0.1	0	0	5.0	0	0
STOP	REC	0	0.8	0.8	5.0	1.3	0	1.8	0	2.0	0	0.1	5.0	0.1	0	0.1	0	0	5.0	0	0

Ref No.		IC4001																			
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
MODE	REC	-	4.4	4.4	-	-	-	-	3.4	4.5	4.5	4.5	4.5	4.5	4.5	0	4.5	0	-	0	5.1
PLAY		-	4.4	4.4	-	-	-	-	3.4	4.5	4.5	4.5	4.5	4.5	4.5	0	4.5	0	-	0	5.1
STOP		-	4.4	4.4	-	-	-	-	3.4	4.5	4.5	4.5	4.5	4.5	4.5	0	4.5	0	-	0	5.1
Ref No.		IC4001																			
		21	22	23	24	25	26	27	28	29	30	31	32								
MODE	REC	5.1	0	4.5	4.5	4.5	4.5	4.5	4.5	4.5	9.0	4.5	4.5								
PLAY		5.1	0	4.5	4.5	4.5	4.5	4.5	4.5	4.5	9.0	4.5	4.5								
STOP		5.1	0	4.5	4.5	4.5	4.5	4.5	4.5	4.5	9.0	4.5	4.5								
Ref No.		IC4002					IC4003					IC4001					IC4001				
		1	2	3	4	5	1	2	3	4	5	1	2	3							
MODE	REC	1.3	0	4.9	6.1	5.0	4.9	0	1.3	9.0	12.4	1.7	5.0	0							
PLAY		1.3	0	4.9	6.1	5.0	4.9	0	1.3	9.0	12.4	1.7	5.0	0							
STOP		1.3	0	4.9	6.1	5.0	4.9	0	1.3	9.0	12.4	1.7	5.0	0							
Ref No.		IC7401								IC7501											
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
MODE	REC	0	5.0	0	4.9	4.9	4.9	4.9	4.9	5.0	1.3	2.1	0	0.5	0.6	0	5.0	5.0	5.0	4.7	0
PLAY		0	5.0	0	4.9	4.9	4.9	4.9	4.9	5.0	1.3	2.1	0	0.5	0.6	0	5.0	5.0	5.0	4.7	0
STOP		0	5.0	0	4.9	4.9	4.9	4.9	4.9	5.0	1.3	2.1	0	0.5	0.6	0	5.0	5.0	5.0	4.7	0
Ref No.		IC7501								IC7501											
		21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
MODE	REC	0	4.7	4.7	5.0	4.9	4.9	4.9	4.9	0.6	5.0	-	0	-	3.1	4.9	4.9	4.9	4.8	0	4.8
PLAY		0	4.7	4.7	5.0	4.9	4.9	4.9	4.9	0.3	5.0	-	0	-	3.1	4.9	4.9	4.9	4.8	0	4.8
STOP		0	4.7	4.7	5.0	4.9	4.9	4.9	4.9	0.6	5.0	-	0	-	3.1	4.9	4.9	4.9	4.8	0	4.8
Ref No.		IC7501								IC7501											
		41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
MODE	REC	-	-18.1	-18.1	-18.1	-17.7	-17.7	-17.7	-17.7	-21.1	-21.1	-14.3	-17.6	-17.6	-17.6	-14.2	-14.2	-21.0	-21.0	-10.8	-17.6
PLAY		-	-18.1	-18.1	-18.1	-17.7	-17.7	-17.7	-17.7	-17.6	-17.6	-10.8	-21.1	-21.1	-21.1	-17.6	-17.6	-14.3	-10.8	-4.0	-10.8
STOP		-	-18.1	-18.1	-18.1	-17.7	-17.7	-17.7	-17.7	-21.1	-21.1	-14.3	-17.6	-17.6	-17.6	-14.2	-14.2	-21.0	-21.0	-10.8	-17.6
Ref No.		IC7501								IC7501											
		61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
MODE	REC	-17.6	-17.6	-17.6	-17.9	-	-	-	-	-	-	4.9	-	-	-0.2	-0.4	-	-	0	0	0
PLAY		-21.1	-21.1	-21.4	-4.4	-	-	-	-	-	-	4.9	-	-	-0.2	-0.4	-	-	0	0	0
STOP		-17.6	-17.6	-17.6	-17.9	-	-	-	-	-	-	4.9	-	-	-0.2	-0.4	-	-	0	0	0
Ref No.		IC7501								IC7501											
		81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
MODE	REC	4.9	0	0	0	-	-	0	0	-21.6	4.9	-	1.2	1.3	0	-	4.8	0	0	4.9	
PLAY		4.9	0	0	0	-	-	0	0	-21.6	4.9	-	1.2	1.3	0	-	4.8	0	0	4.9	
STOP		4.9	0	0	0	-	-	0	0	-21.6	4.9	-	1.2	1.3	0	-	4.8	0	0	4.9	
Ref No.		IC7504								IC7514											
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
MODE	REC	5.6	1.3	1.3	0	0	0	0	12.3	4.9	5.2	0	-	-	-	-	-	-	-	-	-
PLAY		5.6	1.3	1.3	0	0	0	0	12.3	4.9	5.2	0	-	-	-	-	-	-	-	-	-
STOP		5.6	1.3	1.3	0	0	0	0	12.3	4.9	5.2	0	-	-	-	-	-	-	-	-	-
Ref No.		IC8001								IC8001											
		21	22	23	24	25	26	27	28	29	30	31	32								
MODE	REC	0	-	-	-	-	5.0	4.9	0	5.0	2.3	2.4	0	-	-	-	4.2	-	-	-	-
PLAY		-	-	-	-	-	5.0	4.9	0	5.0	2.3	2.4	0	-	-	-	4.2	-	-	-	-
STOP		-	-	-	-	-	5.0	4.9	0	5.0	2.3	2.4	0	-	-	-	4.2	-	-	-	-
Ref No.		IC8002								Q1501											
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
MODE	REC	0	0	-0.1	0	0	-0.1	0	0	-0.1	0	0	-0.1	0	0	-0.1	3.3	5.1	3.3		
PLAY		0	0	-0.1	0	0	-0.1	0	0	-0.1	0	0	-0.1	0	0	-0.1	3.3	5.1	3.3		
STOP		0	0	-0.1	0	0	-0.1	0	0	-0.1	0	0	-0.1	0	0	-0.1	3.3	5.1	3.3		
Ref No.		Q1503								Q1503											
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
MODE	REC	12.4	12.4	12.4	6.2	12.3	12.3	12.3	12.3	5.1	5.1	5.1	0.6	5.1	5.1	5.1	5.1	5.1	5.1	5.1	
PLAY		12.4	12.4	12.4	6.2	12.3	12.3	12.3	12.3	5.1	5.1	5.1	0.6	5.1	5.1	5.1	5.1	5.1	5.1	5.1	
STOP		12.4	12.4	12.4	6.2	12.3	12.3	12.3	12.3	5.1	5.1	5.1	0.6	5.1	5.1	5.1	5.1	5.1	5.1	5.1	
Ref No.		Q4001								Q4002											
		E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	S	D	G		
MODE	REC	0	0	-0.1	0	0	-0.1	0	0	-0.1	0	0	-0.1	0	0	-0.1	3.3	5.1	3.3		
PLAY		0	0	-0.1	0	0	-0.1	0	0	-0.1	0	0	-0.1	0	0	-0.1	3.3	5.1	3.3		
STOP		0	0	-0.1	0	0	-0.1	0	0	-0.1	0	0	-0.1	0	0	-0.1	3.3	5.1	3.3		
Ref No.		Q7402								Q7501											
		Q																			

Ref No.	Q7505			Q7509			Q7510			Q7511			Q7513		
	E	C	B	E	C	B	E	C	B	E	C	B	S	D	G
MODE															
REC	-18.1	5.0	-18.0	5.1	12.4	5.6	3.3	5.1	3.3	3.3	4.9	3.3	3.3	3.3	4.9
PLAY	-18.1	5.0	-18.0	5.1	12.4	5.6	3.3	5.1	3.3	3.3	4.9	3.3	3.3	3.3	4.9
STOP	-18.1	5.0	-18.0	5.1	12.4	5.6	3.3	5.1	3.3	3.3	4.9	3.3	3.3	3.3	4.9
Ref No.	Q7514			Q7801			Q8001			Q8002			Q8003		
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B
REC	3.3	5.1	3.3	2.6	0	2.0	0	0	0.8	0	0	0.8	4.2	4.2	4.8
PLAY	3.3	5.1	3.3	2.6	0	2.0	0	0	0.8	0	0	0.8	4.2	4.2	4.8
STOP	3.3	5.1	3.3	2.6	0	2.0	0	0	0.8	0	0	0.8	4.2	4.2	4.8
Ref No.	Q8004			Q8005											
MODE	E	C	B	E	C	B									
REC	0	5.0	0	0	0	0									
PLAY	0	5.0	0	0	0	0									
STOP	0	5.0	0	0	0	0									
Ref No.	QR1501			QR1502			QR1503			QR4001			QR4002		
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B
REC	0	0	4.9	0	5.9	0	0	0	4.9	0	0	2.3	5.1	-0.1	5.1
PLAY	0	0	4.9	0	5.9	0	0	0	4.9	0	0	2.3	5.1	-0.1	5.1
STOP	0	0	4.9	0	5.9	0	0	0	4.9	0	0	2.3	5.1	-0.1	5.1
Ref No.	QR4003			QR7501			QR7503								
MODE	E	C	B	E	C	B	E	C	B						
REC	0	5.1	0	5.0	4.9	0	5.1	0	5.0						
PLAY	0	5.1	0	5.0	4.9	0	5.1	0	5.0						
STOP	0	5.1	0	5.0	4.9	0	5.1	0	5.0						

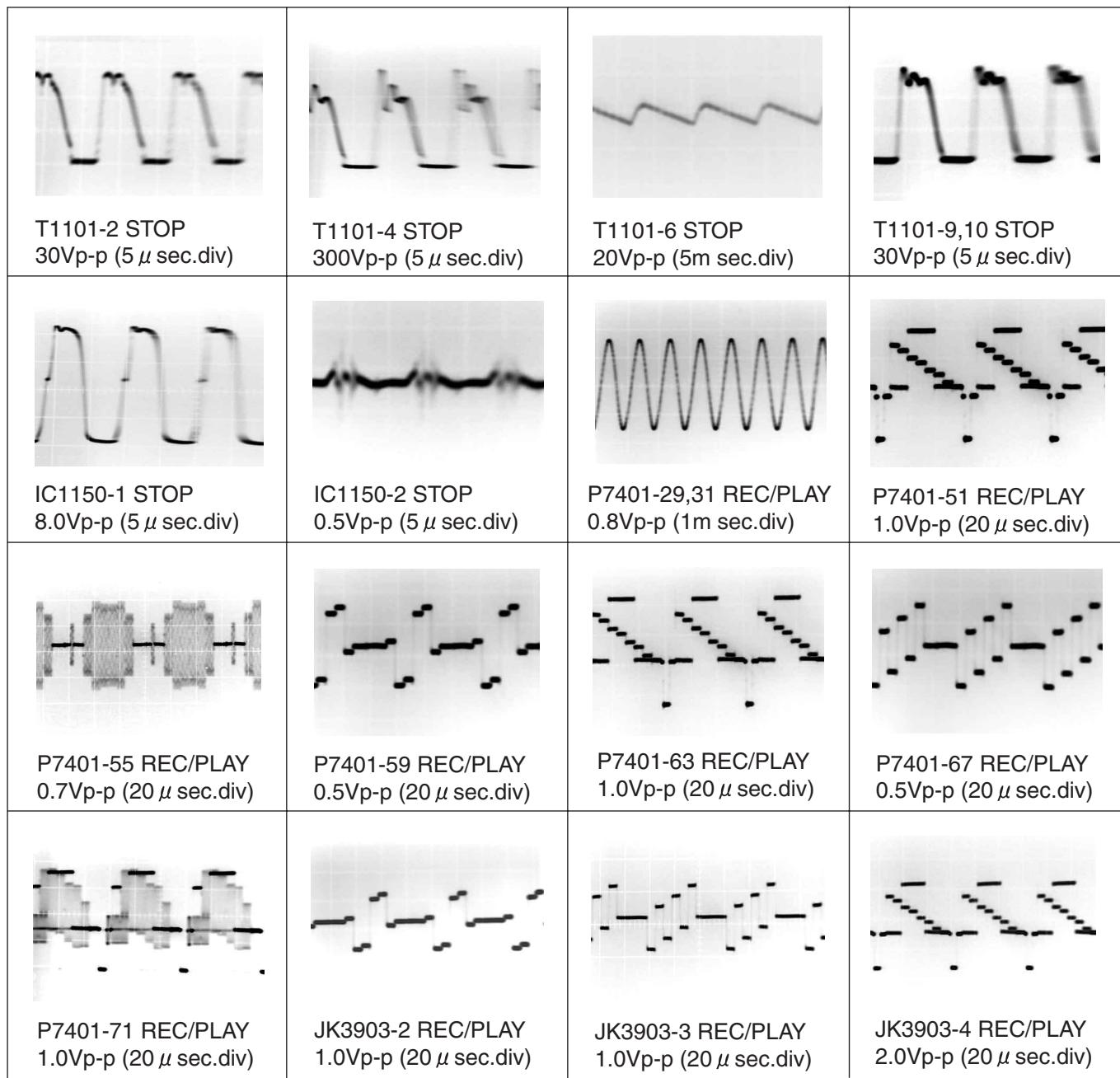
15.1.3. HDMI P.C.B.

Ref No.	IC56101																				
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
REC	0	1.5	1.6	1.2	1.6	0	1.6	0	1.2	0	1.3	0	1.6	0	1.6	1.3	1.6	1.5	0	3.3	
PLAY	0	1.5	1.6	1.2	1.6	0	1.6	0	1.2	0	1.3	0	1.6	0	1.6	1.3	1.6	1.5	0	3.3	
STOP	0	1.5	1.6	1.2	1.6	0	1.6	0	1.2	0	1.3	0	1.6	0	1.6	1.3	1.6	1.5	0	3.3	
Ref No.	IC56102																				
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
REC	0	0.7	1.5	1.2	1.0	0.9	1.2	0.7	1.7	0	1.6	0.7	1.1	0.9	0.9	1.5	1.1	0	0	3.3	
PLAY	0	0.7	1.5	1.2	1.0	0.9	1.2	0.7	1.7	0	1.6	0.7	1.1	0.9	0.9	1.5	1.1	0	0	3.3	
STOP	0	0.7	1.5	1.2	1.0	0.9	1.2	0.7	1.7	0	1.6	0.7	1.1	0.9	0.9	1.5	1.1	0	0	3.3	
Ref No.	IC56103																				
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
REC	1.6	1.2	0	0	1.2	0	1.6	0	0	0	1.5	0	3.3	3.2	3.2	0	3.3	1.5	3.3	0	
PLAY	1.6	1.2	0	0	1.2	0	1.6	0	0	0	1.5	0	3.3	3.2	3.2	0	3.3	1.5	3.3	0	
STOP	1.6	1.2	0	0	1.2	0	1.6	0	0	0	1.5	0	3.3	3.2	3.2	0	3.3	1.5	3.3	0	
Ref No.	IC56103																				
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	
REC	3.3	0	0	0	0	0	0	3.2	1.5	0	0	-	-	0	0	0	-	0	0	0	
PLAY	3.3	0	0	0	0	0	0	3.2	1.5	0	0	-	-	0	0	0	-	0	0	0	
STOP	3.3	0	0	0	0	0	0	3.2	1.5	0	0	-	-	0	0	0	-	0	0	0	
Ref No.	IC56103																				
MODE	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	
REC	0	3.3	-	-	3.3	0	3.3	1.2	1.2	0	3.3	0	0	0	3.3	0	0	0	3.3	0	
PLAY	0	3.3	-	-	3.3	0	3.3	1.2	1.2	0	3.3	0	0	0	3.3	0	0	0	3.3	0	
STOP	0	3.3	-	-	3.3	0	3.3	1.2	1.2	0	3.3	0	0	0	3.3	0	0	0	3.3	0	
Ref No.	IC56103																				
MODE	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	
REC	0	0	0	-	-	3.3	-	-	-	0	1.5	-	-	-	3.3	-	-	-	0		
PLAY	0	0	0	-	-	3.3	-	-	-	0	1.5	-	-	-	3.3	-	-	-	0		
STOP	0	0	0	-	-	3.3	-	-	-	0	1.5	-	-	-	3.3	-	-	-	0		
Ref No.	IC56103																				
MODE	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	
REC	-	-	-	-	-	-	-	0	-	-	-	3.3	1.5	-	-	-	0	-	-	-	
PLAY	-	-	-	-	-	-	-	0	-	-	-	3.3	1.5	-	-	-	0	-	-	-	
STOP	-	-	-	-	-	-	-	0	-	-	-	3.3	1.5	-	-	-	0	-	-	-	
Ref No.	IC56103																				
MODE	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	
REC	3.3	-	-	-	0	-	0	0	0	0	1.5	0	1.5	0	0	0	0	3.3	0	0	
PLAY	3.3	-	-	-	0	-	0	0	0	0	1.5	0	1.5	0	0	0	0	3.3	0	0	
STOP	3.3	-	-	-	0	-	0	0	0	0	1.5	0	1.5	0	0	0	0	3.3	0	0	
Ref No.	IC56103																				
MODE	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	
REC	0	0	0	0	0	0	0	0	0	0	3.3	1.5	1.5	1.5	0.9	1.2	1.6	0	0.7	0.9	1.0
PLAY	0	0	0	0	0	0	0	0	0	0	3.3	1.5	1.5	1.5	0.9	1.2	1.6	0	0.7	0.9	1.0
STOP	0	0	0	0	0	0	0	0	0	0	3.3	1.5	1.5	1.5	0.9	1.2	1.6	0	0.7	0.9	1.0
Ref No.	IC56103																				
MODE	161	162	163	164																	
REC	0.9	1.5	1.6	1.6																	
PLAY	0.9	1.5	1.6	1.6																	
STOP	0.9	1.5	1.6	1.6																	
Ref No.	IC56104																				
MODE	1	2	3	4	5	6	7	8		1	2	3	4	5		1	2	3	4	5	
REC	3.3	0	1.3	0	4.8	0	0	3.9		5.7	0	4.8	0	5.0		0	1.6	0	1.5	3.3	
PLAY	3.3	0	1.3	0	4.8	0	0	3.9		5.7	0	4.8	0	5.0		0	1.6	0	1.5	3.3	
STOP	3.3	0	1.3	0	4.8	0	0	3.9		5.7	0	4.8	0	5.0		0	1.6	0	1.5	3.3	
Ref No.	Q56001																				
MODE	E	C	B		E	C	B			E	C	B			1	2	3		1	2	3
REC	0	4.9	0		0	0	0.6			0	3.7	0			3.3	5.0	3.3		3.3	5.0	3.3
PLAY	0	4.9	0		0	0	0.6			0	3.7	0			3.3	5.0	3.3		3.3	5.0	3.3
STOP	0	4.9	0		0	0	0.6			0	3.7	0			3.3	5.0	3.3		3.3	5.0	3.3
Ref No.	QR56104																				
MODE	E	C	B		E	C	B														
REC	3.7	3.5	3.7		0	3.5	0														
PLAY	3.7	3.5	3.7		0	3.5	0														
STOP	3.7	3.5	3.7		0	3.5	0														

15.1.4. P59001 Connector

Ref No. MODE		P59001																			
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
REC	0	0	0	0	0	0	0	0	0	0	0	0	3.3	12.3	4.9	12.3	3.3	0	4.9	0	
PLAY	0	0	0	0	0	0	0	0	0	0	0	0	3.3	12.3	4.9	12.3	3.3	0	4.9	0	
STOP	0	0	0	0	0	0	0	0	0	0	0	0	3.3	12.3	4.9	12.3	3.3	0	4.9	0	
Ref No. MODE		P59001																			
		21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
REC	3.3	5.1	3.3	5.1	5.0	3.3	2.3	3.1	2.5	4.9	2.5	3.3	0	3.3	0	3.3	0	3.3	2.5	-	
PLAY	3.3	5.1	3.3	5.1	5.0	3.3	2.3	3.1	2.5	4.9	2.5	3.3	0	3.3	0	3.3	0	3.3	2.5	-	
STOP	3.3	5.1	3.3	5.1	5.0	3.3	2.3	3.2	2.5	4.9	2.5	3.3	0	3.3	0	3.3	0	3.3	2.5	-	
Ref No. MODE		P59001																			
		41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
REC	2.5	3.3	0	1.7	0	0	0	3.3	0	3.3	1.1	0	0	-	1.5	3.3	0	0	1.0	4.1	
PLAY	2.5	3.3	0	1.7	0	0	0	3.3	0	3.3	1.1	0	0	-	1.5	3.3	0	0	1.0	4.1	
STOP	2.5	3.3	0	1.7	0	0	0	3.3	0	3.3	1.1	0	0	-	1.5	3.3	0	0	1.0	4.1	
Ref No. MODE		P59001																			
		61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
REC	0	4.1	1.1	12.3	0	12.3	1.0	12.3	0	12.3	1.3	12.3	0	12.3	2.1	5.0	0	0	-	2.1	
PLAY	0	4.1	1.1	12.3	0	12.3	1.0	12.3	0	12.3	1.3	12.3	0	12.3	2.1	5.0	0	0	-	2.1	
STOP	0	4.1	1.1	12.3	0	12.3	1.0	12.3	0	12.3	1.3	12.3	0	12.3	2.1	5.0	0	0	-	2.1	
Ref No. MODE		P59001																			
		81	82	83	84	85	86	87	88												
REC	0	0	0	0	0	0	0	0	0												
PLAY	0	0	0	0	0	0	0	0	0												
STOP	0	0	0	0	0	0	0	0	0												

15.1.5. Waveform Chart



15.1.6. Abbreviations

INITIAL/LOGO	ABBREVIATIONS	
A	A0~UP ACLK AD0~UP ADATA ALE AMUTE AREQ ARF ASI ASO ASYNC	ADDRESS AUDIO CLOCK ADDRESS BUS AUDIO PES PACKET DATA ADDRESS LATCH ENABLE AUDIO MUTE AUDIO PES PACKET REQUEST AUDIO RF SERVO AMP INVERTED INPUT SERVO AMP OUTPUT AUDIO WORD DISTINCTION SYNC
B	BCK BCKIN BDO BLKCK BOTTOM BYP BYTCK	BIT CLOCK (PCM) BIT CLOCK INPUT BLACK DROP OUT SUB CODE BLOCK CLOCK CAP. FOR BOTTOM HOLD BYPATH BYTE CLOCK
C	CAV CBDO CD CDSCK CDSRDATA CDRF CDV CHNDATA CKSL CLV COFTR CPA CPCS CPDT CPUADR CPUADT CPUIRQ CPRD CPWR CS CSYNCIN CSYNCOUT	CONSTANT ANGULAR VELOCITY CAP. BLACK DROP OUT COMPACT DISC CD SERIAL DATA CLOCK CD SERIAL DATA CD RF (EFM) SIGNAL COMPACT DISC-VIDEO CHANNEL DATA SYSTEM CLOCK SELECT CONSTANT LINEAR VELOCITY CAP. OFF TRACK CPU ADDRESS CPU CHIP SELECT CPU DATA CPU ADDRESS LATCH CPU ADDRESS DATA BUS CPU INTERRUPT REQUEST CPU READ ENABLE CPU WRITE ENABLE CHIP SELECT COMPOSITE SYNC IN COMPOSITE SYNC OUT
D	DACCK DEEMP DEMPH DIG0~UP DIN DMSRCK DMUTE DO DOUT0~UP DRF DRPOUT DREQ DRESP DSC DSLFB DVD	D/A CONVERTER CLOCK DEEMPHASIS BIT ON/OFF DEEMPHASIS SWITCHING FL DIGIT OUTPUT DATA INPUT DM SERIAL DATA READ CLOCK DIGITAL MUTE CONTROL DROP OUT DATA OUTPUT DATA SLICE RF (BIAS) DROP OUT SIGNAL DATA REQUEST DATA RESPONSE DIGITAL SERVO CONTROLLER DATA SLICE LOOP FILTER DIGITAL VIDEO DISC

INITIAL/LOGO	ABBREVIATIONS	
E	EC ECR ENCSEL ETMCLK ETSCLK	ERROR TORQUE CONTROL ERROR TORQUE CONTROL REFERENCE ENCODER SELECT EXTERNAL M CLOCK (81MHz/40.5MHz) EXTERNAL S CLOCK (54MHz)
F	FBAL FCLK FE FFI FEO FG FSC FSCK	FOCUS BALANCE FRAME CLOCK FOCUS ERROR FOCUS ERROR AMP INVERTED INPUT FOCUS ERROR AMP OUTPUT FREQUENCY GENERATOR FREQUENCY SUB CARRIER FS (384 OVER SAMPLING) CLOCK
G	GND	COMMON GROUNDING (EARTH)
H	HA0~UP HD0~UP HINT HRXW	HOST ADDRESS HOST DATA HOST INTERRUPT HOST READ/WRITE

INITIAL/LOGO	ABBREVIATIONS	
I	IECOUT IPFRAG IREF ISEL	IEC958 FORMAT DATA OUTPUT INTERPOLATION FLAG I (CURRENT) REFERENCE INTERFACE MODE SELECT
L	LDON LPC LRCK	LASER DIODE CONTROL LASER POWER CONTROL L CH/R CH DISTINCTION CLOCK
M	MA0~UP MCK MCKI MCLK MDATA MDQ0~UP MDQM MLD MPEG	MEMORY ADDRESS MEMORY CLOCK MEMORY CLOCK INPUT MEMORY SERIAL COMMAND CLOCK MEMORY SERIAL COMMAND DATA MEMORY DATA INPUT/OUTPUT MEMORY DATA I/O MASK MEMORY SERIAL COMMAND LOAD MOVING PICTURE EXPERTS GROUP
O	ODC OFTR OSCI OSCO OSD	OPTICAL DISC CONTROLLER OFF TRACKING OSCILLATOR INPUT OSCILLATOR OUTPUT ON SCREEN DISPLAY
P	P1~UP PCD PCK PDVD PEAK PLLCLK PLLOK PWMCTL PWMDA PWOA, B	PORT CD TRACKING PHASE DIFFERENCE PLL CLOCK DVD TRACKING PHASE DIFFERENCE CAP. FOR PEAK HOLD CHANNEL PLL CLOCK PLL LOCK PWM OUTPUT CONTROL PULSE WAVE MOTOR DRIVE A PULSE WAVE MOTOR OUT A, B

INITIAL/LOGO	ABBREVIATIONS	
R	RE RFENV RFO RS RSEL RST RSV	READ ENABLE RF ENVELOPE RF PHASE DIFFERENCE OUTPUT (CD-ROM) REGISTER SELECT RF POLARITY SELECT RESET RESERVE
S	SB10, 1 SBO0 SBT0, 1 SCK SCKR SCL SCLK SDA SEG0~UP SELCLK SEN SIN1, 2 SOUT1, 2 SPDI SPDO SPEN SPRCLK SPWCLK SQCK SQCX SRDATA SRMADR SRMDT0~7 SS STAT STCLK STD0~UP STENABLE STSEL STVALID SUBC SBCK SUBQ SYSCLK	SERIAL DATA INPUT SERIAL DATA OUTPUT SERIAL CLOCK SERIAL DATA CLOCK AUDIO SERIAL CLOCK RECEIVER SERIAL CLOCK SERIAL CLOCK SERIAL DATA FL SEGMENT OUTPUT SELECT CLOCK SERIAL PORT ENABLE SERIAL DATA IN SERIAL DATA OUT SERIAL PORT DATA INPUT SERIAL PORT DATA OUTPUT SERIAL PORT R/W ENABLE SERIAL PORT READ CLOCK SERIAL PORT WRITE CLOCK SUB CODE Q CLOCK SUB CODE Q DATA READ CLOCK SERIAL DATA SRAM ADDRESS BUS SRAM DATA BUS 0~7 START/STOP STATUS STREAM DATA CLOCK STREAM DATA STREAM DATA INPUT ENABLE STREAM DATA POLARITY SELECT STREAM DATA VALIDITY SUB CODE SERIAL SUB CODE CLOCK SUB CODE Q DATA SYSTEM CLOCK

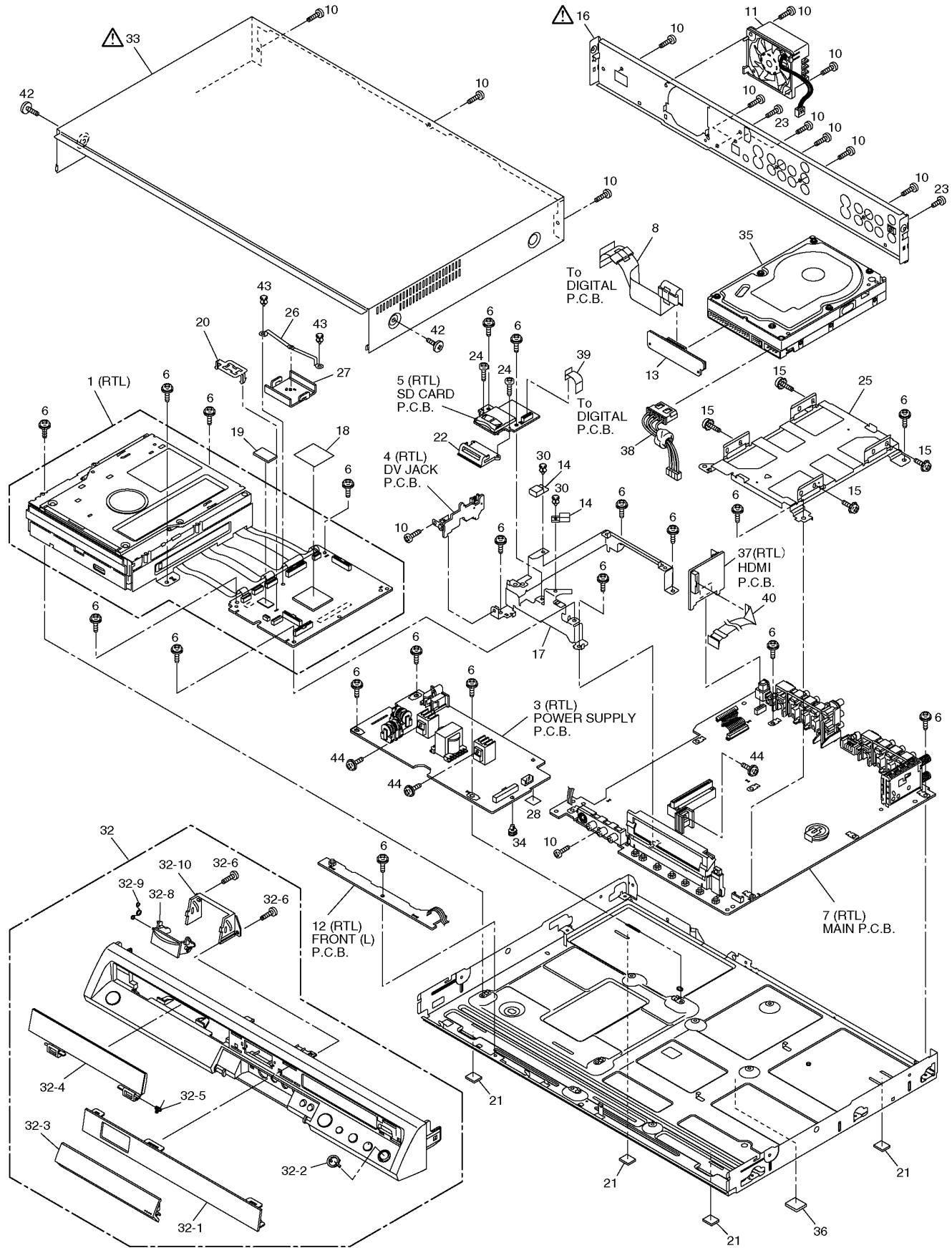
INITIAL/LOGO		ABBREVIATIONS
T	TE TIBAL TID TIN TIP TIS TPSN TPSO TPSP TRCRS TRON TRSON	TRACKING ERROR BALANCE CONTROL BALANCE OUTPUT 1 BALANCE INPUT BALANCE INPUT BALANCE OUTPUT 2 OP AMP INPUT OP AMP OUTPUT OP AMP INVERTED INPUT TRACK CROSS SIGNAL TRACKING ON TRAVERSE SERVO ON

INITIAL/LOGO		ABBREVIATIONS
V	VBLANK VCC VCDCONT VDD VFB VREF VSS	V BLANKING COLLECTOR POWER SUPPLY VOLTAGE VIDEO CD CONTROL (TRACKING BALANCE) DRAIN POWER SUPPLY VOLTAGE VIDEO FEED BACK VOLTAGE REFERENCE SOURCE POWER SUPPLY VOLTAGE
W	WAIT WDCK WEH WSR	BUS CYCLE WAIT WORD CLOCK WRITE ENABLE HIGH WORD SELECT RECEIVER
X	X XALE XAREQ XCDROM XCS XCSYNC XDS XHSYNCO XHINT XI XINT XMW XO XRE XSRMCE XSRMOE XSRMWE XVCS XVDS XVSYNCO	X' TAL X ADDRESS LATCH ENABLE X AUDIO DATA REQUEST X CD ROM CHIP SELECT X CHIP SELECT X COMPOSITE SYNC X DATA STROBE X HORIZONTAL SYNC OUTPUT XH INTERRUPT REQUEST X' TAL OSCILLATOR INPUT X INTERRUPT X MEMORY WRITE ENABLE X' TAL OSCILLATOR OUTPUT X READ ENABLE X SRAM CHIP ENABLE X SRAM OUTPUT ENABLE X SRAM WRITE ENABLE X V-DEC CHIP SELECT X V-DEC CONTROL BUS STROBE X VERTICAL SYNC OUTPUT

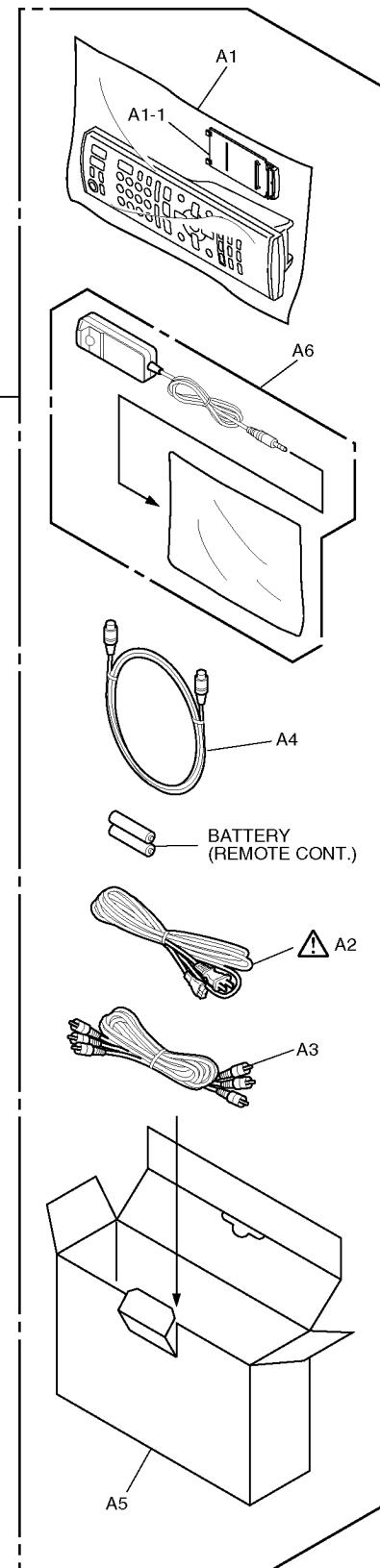
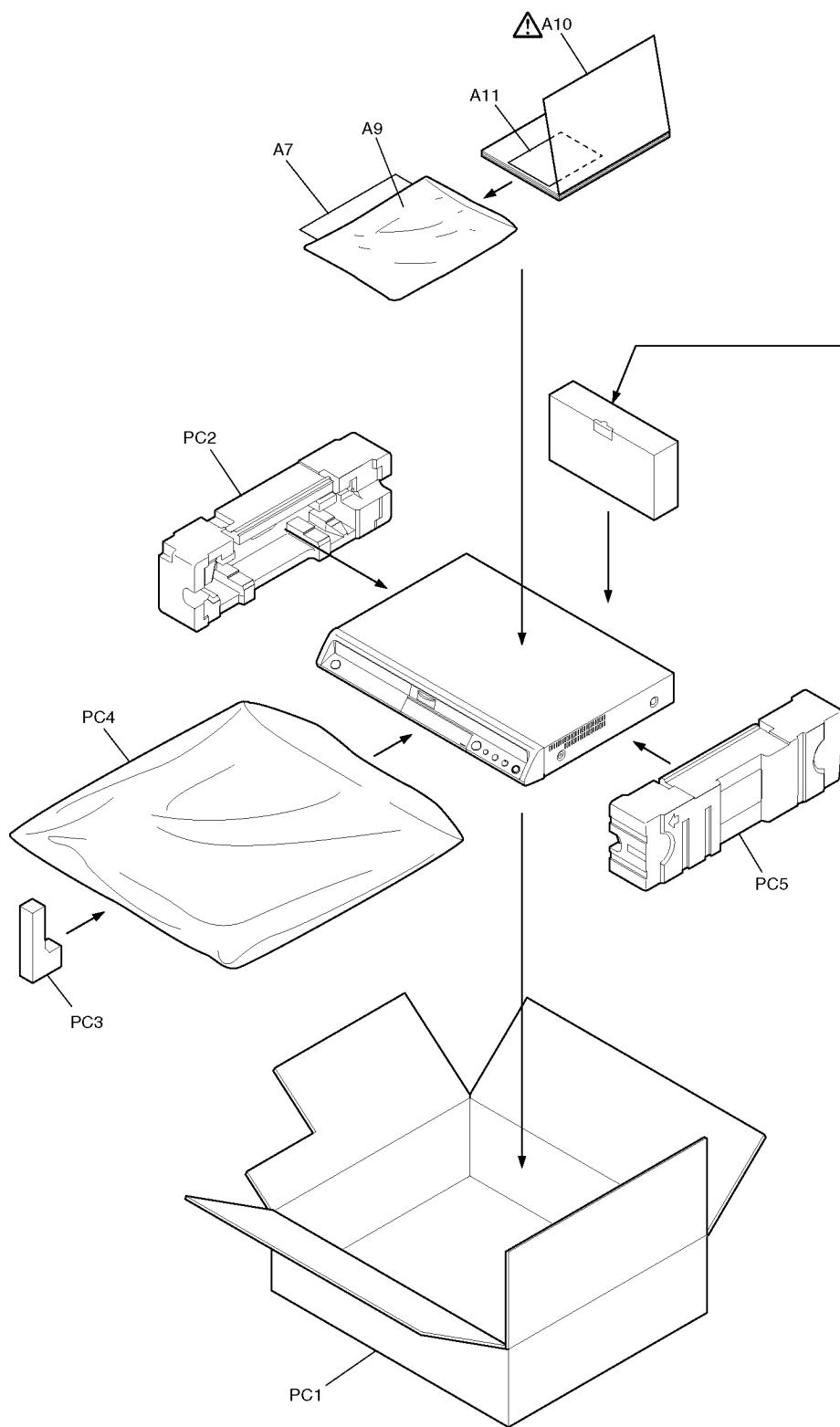
16 Parts and Exploded Views

16.1. Exploded Views

16.1.1. Casing Parts & Mechanism Section



16.1.2. Packing & Accessories Section



16.2. Replacement Parts List

Notes:

*Important safety notice:

Components identified by  mark have special characteristics important for safety.

Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.

When replacing any of components, be sure to use only manufactures specified parts shown in the parts list.

*Warning: This product uses a laser diode. Refer to caution statements.

*Capacity values are in microfarads (μF) unless specified otherwise, P=Pico-farads (pF), F=Farads (F).

*Resistance values are in ohms, unless specified otherwise, 1K=1,000 (OHM), 1M=1,000k (OHM).

*The marking (RTL) indicates the retention time is limited for this item. After the discontinuation of this assembly in production, it will no longer be available.

**(IA)-(IB)", marks in Remarks indicate languages of instruction manuals. [(IA): English, (IB): Canadian French]

*Parts indicated with PAVC-CSG in the Remarks column are supplied by PAVC-CSG.

*All parts except parts indicated with (PAVC-CSG) in the Remarks column are supplied by PAVCSG.

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
■	VEP70135A	FRONT P.C.B.		(RTL)
S7002	EVQ11A04M	SWITCH, POWER	1	
■	VEP71108A	POWER SUPPLY P.C.B.		(RTL)
C1101	ECQU2A683MLC	100V 0.068U	1	
C1104	F1B2G1020002	400V 1000P	1	
C1105	F1B2G1020002	400V 1000P	1	
C1106	ECQU2A683MLC	100V 0.068U	1	
C1107	EETHC2E151HY	250V 150U	1	
C1109	F1B2G1020002	400V 1000P	1	
C1110	F1B3A3320011	1KV 3300P	1	
C1111	F2A1V6800002	35V 68P	1	
C1114	ECJ1VB1C104K	16V 0.1U	1	
C1115	ECJ1VB1H102K	50V 1000P	1	
C1116	ECJ1VC1H331J	50V 330P	1	
C1118	ECJ1VB1H102K	50V 1000P	1	
C1119	F1H1H472A798	50V 4700P	1	
C1202	ECJ1VB1C104K	16V 0.1U	1	
C1203	ECJ1VB1C473K	16V 0.047U	1	
C1204	F2A1C1820005	16V 1800P	1	
C1205	F2A1C1820005	16V 1800P	1	
C1206	F2A1C8210008	16V 820P	1	
C1302	ECJ1VC1H181J	50V 180P	1	
C1303	F2A1C3310045	16V 330P	1	
C1304	ECJ1VB1H103K	50V 0.01U	1	
C1305	ECJ1VB1C104K	16V 0.1U	1	
C1306	ECJ1VB1C104K	16V 0.1U	1	
C1307	ECJ1VB1C104K	16V 0.1U	1	
C1308	F2AOJ6810007	6.3V 680P	1	
C1309	ECJ1VB1C104K	16V 0.1U	1	
C1401	F2A1E4700048	25V 47U	1	
C1402	F2A1C4710079	16V 470P	1	
C1403	ECJ1VB1C104K	16V 0.1U	1	
C1404	ECJ1VB1C104K	16V 0.1U	1	
C1405	F1H1A474A028	10V 0.47U	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C1406	ECJ1VC1H181J	50V 180P	1	
C1407	ECJ1VB1H103K	50V 0.01U	1	
C1408	F2A1A6810022	10V 680P	1	
C1409	ECJ1VB1C104K	16V 0.1U	1	
D1101	B0EDKT000009	DIODE	1	
D1102	B0HAGM000006	DIODE	1	
D1103	MAZ4150NMF		1	
D1104	MAZ4082NMF	DIODE	1	
D1105	MA2C165001VT	DIODE	1	
D1106	MAZ73000BC	DIODE	1	
D1109	MA2J11100L	DIODE	1	
D1201	B0JBSG000010	DIODE	1	
D1301	B0JCPD000021	DIODE	1	
D1401	MA2C165001VT	DIODE	1	
D1402	B0JCPD000021	DIODE	1	
F1101	K5D202BK0005	FUSE	1	
IC1150	CODACZH00031	IC	1	
IC1200	CODAEMB00003	IC	1	
IC1301	CODBARG00007	IC	1	
IC1401	C0DBAZZ00132	IC	1	
IP1401	K5H302100004	IC PROTECTOR	1	
K1105	ERJ3GEY0R00V	1/10W 0	1	
L1101	G0B100E00002	COIL 10UH	1	
L1102	G0B100E00002	COIL 10UH	1	
L1201	G0A100H00025	COIL 10UH	1	
L1300	G0A220ZA0043	COIL	1	
L1401	G0A150ZA0041	COIL 15UH	1	
L1402	G0A100HA0023	COIL 10UH	1	
LB1101	J0JKB0000003	COIL	1	
LB1102	J0JKB0000003	COIL	1	
LB1103	J0JHC000032	COIL	1	
LB1301	J0JHC000032	COIL	1	
LB1401	J0JHC000048	FILTER	1	
P1101	K2AB2H000004	AC INLET	1	
P1201	K1KB23A00004	CONNECTOR (23P)	1	
P1202	K1KA03AA0301	CONNECTOR (3P)	1	
Q1202	B3PBA0000237	TRANSISTOR	1	
Q1301	B1DHDD000029	TRANSISTOR	1	
Q1401	B1DHED000008	TRANSISTOR	1	
QR1401	UNR511300L	TRANSISTOR	1	
QR1402	UNR521300L	TRANSISTOR	1	
R1100	ERDS1TJ474T	1W 470K	1	
R1101	ERDS2TJ151T	1/4W 150	1	
R1102	ERJ3GEYJ330V	1/10W 33	1	
R1103	ERJ3GEYJ330V	1/10W 33	1	
R1104	ERJ3GEYJ473V	1/10W 47K	1	
R1105	ERJ3GEYJ103V	1/10W 10K	1	
R1106	ERJ3GEYJ682V	1/10W 6.8K	1	
R1107	ERJ3RBD243V	1/16W 24K	1	
R1108	ERJ3RBD272V	1/16W 2.7K	1	
R1109	ERJ3GEY0R00V	1/10W 0	1	
R1110	ERJ3RBD432V	1/16W 4.3K	1	
R1115	ERJ3GEY0R00V	1/10W 0	1	
R1201	ERJ3GEYJ222V	1/10W 2.2K	1	
R1202	ERJ3GEYJ222V	1/10W 2.2K	1	
R1205	ERJ3GEYJ103V	1/10W 10K	1	
R1206	ERJ3RBD242V	1/16W 2.4K	1	
R1207	ERJ3RBD301V	1/16W 300	1	
R1208	ERJ3RBD912V	1/16W 9.1K	1	
R1209	ERJ3GEYJ102V	1/10W 1K	1	
R1300	ERJ3GEYJ513V	1/10W 51K	1	
R1302	D1BFR0270001	1/2W 0.027	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R1303	ERJ3RBD562V	1/16W 5.6K	1	
R1304	ERJ3RBD203V	1/16W 20K	1	
R1305	ERJ3RBD222V	1/16W 2.2K	1	
R1401	ERJ3GEYJ471V	1/10W 470	1	
R1402	ERJ3GEYJ104V	1/10W 100K	1	
R1403	ERJ3GEYJ472V	1/10W 4.7K	1	
R1404	ERJ3GEYJ223V	1/10W 22K	1	
R1405	ERJ3GEYJ513V	1/10W 51K	1	
R1406	D1BFR0270001	1/2W 0.027	1	
R1407	ERJ3RBD222V	1/16W 2.2K	1	
R1408	ERJ3RBD822V	1/16W 8.2K	1	
R1409	ERJ3RBD272V	1/16W 2.7K	1	
T1101	G4D2A0000263	TRANSFORMER	1	⚠
VA1101	ERZV10D471C2	VARISTOR	1	⚠
ZA1101	EYF52BCY	FUSE HOLDER	1	
ZA1102	EYF52BCY	FUSE HOLDER	1	
■	VEP73135A	DV JACK P.C.B.		(RTL)
P37001	K1KA06B00181	CONNECTOR(6P)	1	
P37002	K2HZ104B0012	CONNECTOR(104P)	1	
■	VEP73136A	SD CARD P.C.B.		(RTL)
C6801	ECJ1VB1H103K	50V 0.01U	1	
C6802	F1H1A225A051	10V 22U	1	
LB6801	J0JHC0000032	COIL	1	
LB6802	J0JHC0000045	COIL	1	
P6801	K1NA09E00075	CONNECTOR(9P)	1	
P6802	K1MY20AA0021	CONNECTOR(20P)	1	
R6801	ERJ3GEYJ101V	1/10W 100	1	
R6802	ERJ3GEYJ220V	1/10W 22	1	
R6803	ERJ3GEYJ220V	1/10W 22	1	
R6804	ERJ3GEYJ223V	1/10W 22K	1	
R6805	ERJ3GEYJ123V	1/10W 12K	1	
R6807	ERJ3GEYJ223V	1/10W 22K	1	
RX6801	EXB38V220JV	RESISTOR-RESISTOR	1	
RX6802	EXB38V123JV	RESISTOR-RESISTOR	1	
■	VEP73137A	HDMI P.C.B.		(RTL)
C56001	ECJ0EC1H221J	50V 220P	1	
C56101	F1G1A104A014	10V 0.1U	1	
C56102	F1G1A104A014	10V 0.1U	1	
C56103	F1G1A104A014	10V 0.1U	1	
C56104	F1G1A104A014	10V 0.1U	1	
C56105	F1G1A104A014	10V 0.1U	1	
C56106	F1G1A104A014	10V 0.1U	1	
C56107	F1G1A104A014	10V 0.1U	1	
C56108	F1G1A104A014	10V 0.1U	1	
C56109	F1G1A104A014	10V 0.1U	1	
C56110	F1G1A104A014	10V 0.1U	1	
C56111	F1G1A104A014	10V 0.1U	1	
C56112	F1G1A104A014	10V 0.1U	1	
C56113	F1G1A104A014	10V 0.1U	1	
C56114	F1G1A104A014	10V 0.1U	1	
C56115	F1G1A104A014	10V 0.1U	1	
C56116	F1G1A104A014	10V 0.1U	1	
C56117	F1G1A104A014	10V 0.1U	1	
C56118	F1G1A104A014	10V 0.1U	1	
C56119	F1G1A104A014	10V 0.1U	1	
C56120	F1G1A104A014	10V 0.1U	1	
C56121	F1G1A104A014	10V 0.1U	1	
C56122	F1G1A104A014	10V 0.1U	1	
C56123	F1G1A104A014	10V 0.1U	1	
C56124	F1G1A104A014	10V 0.1U	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C56125	F1G1A104A014	10V 0.1U	1	
C56126	F1G1A104A014	10V 0.1U	1	
C56127	F1G1A104A014	10V 0.1U	1	
C56128	F1G1A104A014	10V 0.1U	1	
C56129	ECJ0EC1H221J	50V 220P	1	
C56130	ECJ1VB0J105K	6.3V 1U	1	
C56131	F1J0J106A014	6.3V 10U	1	
C56132	ECJ0EB1C103K	16V 0.01U	1	
C56133	F1H1A105A028	10V 1U	1	
C56134	F1H1A105A028	10V 1U	1	
C56135	F1G1A104A014	10V 0.1U	1	
C56140	F1G1A104A014	10V 0.1U	1	
D56101	MA2J72800L	DIODE	1	
FL56101	F1H0J1050025	FILTER	1	
FL56102	F1H0J1050025	FILTER	1	
FL56103	F1H0J1050025	FILTER	1	
FL56104	F1H0J1050025	FILTER	1	
FL56105	F1H0J1050025	FILTER	1	
FL56106	F1H0J1050025	FILTER	1	
FL56110	F1H0J1050025	FILTER	1	
FP56101	K1MN40AA0082	CONNECTOR(40P)	1	
IC56101	COJBAZ002116	IC	1	
IC56102	COJBAZ002116	IC	1	
IC56103	MN864701	IC	1	
IC56104	C0CBCBD00048	IC	1	
IC56105	C0CBCDC00052	IC	1	
IC56107	COJBAB000604	IC	1	
L56101	J0MAB0000170	COIL	1	
L56102	J0MAB0000170	COIL	1	
L56103	J0MAB0000170	COIL	1	
L56104	J0MAB0000170	COIL	1	
LB56101	J0JHC0000032	COIL	1	
LB56102	J0JHC0000032	COIL	1	
LB56103	J0JHC0000032	COIL	1	
LB56104	J0JCC0000119	COIL	1	
LB56105	J0JCC0000119	COIL	1	
LB56106	J0JCC0000119	COIL	1	
LB56107	J0JCC0000119	COIL	1	
LB56108	J0JHC0000032	COIL	1	
LB56109	J0JHC0000032	COIL	1	
LB56110	J0JHC0000032	COIL	1	
LB56111	J0JHC0000032	COIL	1	
LB56112	J0JHC0000032	COIL	1	
LB56115	J0JHC0000032	COIL	1	
LB56116	J0JHC0000032	COIL	1	
P56101	K1KY10BA0033	CONNECTOR(10P)	1	
P56102	K1FA119E0002	CONNECTOR(119P)	1	
Q56001	2SD1819A0L	TRANSISTOR	1	
Q56002	2SD1819A0L	TRANSISTOR	1	
Q56101	2SD1819A0L	TRANSISTOR	1	
Q56102	B1CFH0A00002	TRANSISTOR	1	
Q56103	B1CFH0A00002	TRANSISTOR	1	
Q56104	2SD1819A0L	TRANSISTOR	1	
Q56105	2SD1819A0L	TRANSISTOR	1	
R56001	ERJ2GEJ472X	1/16W 4.7K	1	
R56002	ERJ2GEJ473X	1/16W 47K	1	
R56003	ERJ2GEJ225X	1/16W 2200K	1	
R56004	ERJ2GEJ104X	1/16W 100K	1	
R56101	ERJ2GEJ220X	1/16W 22	1	
R56102	ERJ2GEJ330X	1/16W 33	1	
R56103	ERJ2GEJ330X	1/16W 33	1	
R56104	ERJ2GEJ330X	1/16W 33	1	
R56105	ERJ2GEJ330X	1/16W 33	1	
R56106	ERJ2GEJ820X	1/16W 82	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R56107	ERJ2GEJ330X	1/16W 33	1	
R56108	ERJ2GEJ330X	1/16W 33	1	
R56109	ERJ2GEJ121X	1/16W 120	1	
R56110	ERJ2GEJ330X	1/16W 33	1	
R56111	ERJ2GEJ330X	1/16W 33	1	
R56112	ERJ2GEJ330X	1/16W 33	1	
R56114	ERJ2GEJ330X	1/16W 33	1	
R56115	ERJ2GEJ820X	1/16W 82	1	
R56116	ERJ2GEJ101X	1/16W 100	1	
R56117	ERJ2GEJ151X	1/16W 150	1	
R56118	ERJ2GEJ820X	1/16W 82	1	
R56119	ERJ2GEJ330X	1/16W 33	1	
R56120	ERJ2GEJ151X	1/16W 150	1	
R56121	ERJ2GEJ151X	1/16W 150	1	
R56122	ERJ2GEJ151X	1/16W 150	1	
R56123	ERJ2GEJ511X	1/16W 510	1	
R56124	ERJ2GEJ103X	1/16W 10K	1	
R56125	ERJ2GEJ202X	1/16W 2K	1	
R56126	ERJ2GEJ202X	1/16W 2K	1	
R56127	ERJ2GEJ103X	1/16W 10K	1	
R56128	ERJ2GEJ202X	1/16W 2K	1	
R56129	ERJ2GEJ202X	1/16W 2K	1	
R56130	ERJ2GEJ273X	1/16W 27K	1	
R56131	ERJ2GEJ221X	1/16W 220	1	
R56132	ERJ2GEJ224X	1/16W 220K	1	
R56133	ERJ2GEJ104X	1/16W 100K	1	
R56134	ERJ2GEJ470X	1/16W 47	1	
R56135	ERJ2GEJ470X	1/16W 47	1	
R56137	ERJ2GE0R00X	1/16W 0	1	
R56138	ERJ2GE0R00X	1/16W 0	1	
R56139	ERJ2GEJ820X	1/16W 82	1	
R56140	ERJ2GEJ8R2X	1/16W 8.2	1	
R56142	ERJ2GEJ330X	1/16W 33	1	
R56143	ERJ2GEJ330X	1/16W 33	1	
R56144	ERJ2GEJ8R2X	1/16W 8.2	1	
R56145	ERJ2GEJ8R2X	1/16W 8.2	1	
R56146	ERJ2GEJ8R2X	1/16W 8.2	1	
R56147	ERJ2GEJ8R2X	1/16W 8.2	1	
R56148	ERJ2GEJ8R2X	1/16W 8.2	1	
R56149	ERJ2GEJ8R2X	1/16W 8.2	1	
R56150	ERJ2GEJ8R2X	1/16W 8.2	1	
R56151	ERJ2GEJ820X	1/16W 82	1	
R56152	ERJ2GEJ820X	1/16W 82	1	
R56153	ERJ2GEJ820X	1/16W 82	1	
R56154	ERJ2GEJ820X	1/16W 82	1	
R56155	ERJ2GEJ820X	1/16W 82	1	
R56156	ERJ2GEJ820X	1/16W 82	1	
R56157	ERJ2GEJ820X	1/16W 82	1	
R56158	ERJ2GEJ152X	1/16W 1.5K	1	
R56159	ERJ2GEJ332X	1/16W 3.3K	1	
R56160	ERJ2GEJ223X	1/16W 22K	1	
R56161	ERJ2GEJ470X	1/16W 47	1	
RX56101	D1H83304A024	RESISTOR-RESISTOR	1	
RX56102	D1H83304A024	RESISTOR-RESISTOR	1	
VA56101	D4ED13900002	VARIATOR	1	
VA56102	D4ED13900002	VARIATOR	1	
VA56103	EZZZ0V800AA	VERIABLE RESISTOR	1	
VA56104	D4ED13900002	VARIATOR	1	
VA56105	EZZZ0V800AA	VERIABLE RESISTOR	1	
VA56106	D4ED13900002	VARIATOR	1	
VA56107	EZZZ0V800AA	VERIABLE RESISTOR	1	
VA56108	D4ED13900002	VARIATOR	1	
VA56109	EZZZ0V800AA	VERIABLE RESISTOR	1	
VA56110	D4ED13900002	VARIATOR	1	
VA56111	EZZZ0V800AA	VERIABLE RESISTOR	1	
VA56112	D4ED13900002	VARIATOR	1	
VA56113	D4ED13900002	VARIATOR	1	
■	RFKB79116BT	MAIN P.C.B.	(RTL)	
B7501	CR2354-1GUFE	BATTERY	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C1504	F2A1C1210017	16V 120P	1	
C1505	F2A1A6810022	10V 680P	1	
C1509	F1H1A105A028	10V 1U	1	
C1510	F1H1A105A028	10V 1U	1	
C1511	ECJ1VB1H103K	50V 0.01U	1	
C1512	F2A0J6810007	6.3V 680P	1	
C1513	F1J0J106A014	6.3V 10U	1	
C1518	F1H1A105A028	10V 1U	1	
C1519	F2A1A470A388	10V 47U	1	
C1521	F1H1A105A028	10V 1U	1	
C1522	F1H1A105A028	10V 1U	1	
C1523	F2A1A470A388	10V 47U	1	
C1524	F2A1A101A389	10V 100U	1	
C1525	ECJ1VB1C104K	16V 0.1U	1	
C1526	F1H1A105A028	10V 1U	1	
C1527	F1H1A105A028	10V 1U	1	
C1528	ECJ1VB1H103K	50V 0.01U	1	
C1539	F1H1A105A028	10V 1U	1	
C1541	F2A1E1010099	25V 100P	1	
C1545	F1H1A105A028	10V 1U	1	
C1546	F2A1H1510006	50V 150P	1	
C1550	ECJ1VB1H103K	50V 0.01U	1	
C1551	F1H1A105A028	10V 1U	1	
C1552	F1H1A105A028	10V 1U	1	
C1553	F2A1A470A388	10V 47U	1	
C3001	ECJ1VB1C104K	16V 0.1U	1	
C3002	ECJ1VB1C333K	16V 0.033U	1	
C3003	ECJ1VB1C104K	16V 0.1U	1	
C3004	ECEAOJKN470B	6.3V 47U	1	
C3007	ECJ1VB1H103K	50V 0.01U	1	
C3008	ECJ1VB1H103K	50V 0.01U	1	
C3009	ECJ1VB1H103K	50V 0.01U	1	
C3010	F2A1H2200033	50V 22P	1	
C3011	ECJ1VB1H103K	50V 0.01U	1	
C3012	ECJ1VB1C104K	16V 0.1U	1	
C3013	F2J1C4700005	16V 47U	1	
C3014	ECJ1VB1C104K	16V 0.1U	1	
C3015	ECJ1VB1H103K	50V 0.01U	1	
C3016	ECJ1VB1H103K	50V 0.01U	1	
C3017	ECJ1VB1H103K	50V 0.01U	1	
C3018	ECJ1VB1H103K	50V 0.01U	1	
C3019	F2A1H100A150	50V 10U	1	
C3020	ECJ1VB1C104K	16V 0.1U	1	
C3021	ECJ1VB1H103K	50V 0.01U	1	
C3022	F2J1C4700005	16V 47U	1	
C3023	ECJ1VB1H103K	50V 0.01U	1	
C3024	ECJ1VB1H103K	50V 0.01U	1	
C3025	ECJ1VB1H103K	50V 0.01U	1	
C3026	ECJ1VB1C104K	16V 0.1U	1	
C3027	F2A1E4700048	25V 47U	1	
C3028	ECJ1VB1H103K	50V 0.01U	1	
C3029	ECJ1VB1H103K	50V 0.01U	1	
C3030	ECJ1VB1H103K	50V 0.01U	1	
C3031	ECJ1VB1H103K	50V 0.01U	1	
C3032	F2A1E4700048	25V 47U	1	
C3033	F2A0J471A247	6.3V 470U	1	
C3034	F2A1E470A205	25V 47U	1	
C3035	F2A0J331A247	6.3V 330U	1	
C3036	F2A0J331A247	6.3V 330U	1	
C3037	F2A1E470A205	25V 47U	1	
C3038	F2A0J471A247	6.3V 470U	1	
C3039	F2A1E470A205	25V 47U	1	
C3040	F2A0J471A247	6.3V 470U	1	
C3041	ECJ1VB1H103K	50V 0.01U	1	
C3042	ECJ1VB1H103K	50V 0.01U	1	
C3901	ECJ1VB1H103K	50V 0.01U	1	
C3902	ECJ1VB1H103K	50V 0.01U	1	
C3903	ECJ1VB1C104K	16V 0.1U	1	
C3904	ECJ1VB1C104K	16V 0.1U	1	
C3905	ECJ1VB1H103K	50V 0.01U	1	
C3906	ECJ1VB1H103K	50V 0.01U	1	
C3907	ECJ1VB1C104K	16V 0.1U	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C3908	ECJ1VB1H103K	50V 0.01U	1	
C4001	F2A1H1R0A236	50V 1U	1	
C4002	F2A1H1R0A236	50V 1U	1	
C4003	F2A1H1R0A236	50V 1U	1	
C4004	F2A1H1R0A236	50V 1U	1	
C4005	ECJ1VB1C105K	16V 1U	1	
C4006	ECJ1VB1C105K	16V 1U	1	
C4007	ECJ2VB1E104K	25V 0.1U	1	
C4008	ECJ1VF1C104Z	16V 0.1U	1	
C4011	ECJ1VF1C104Z	16V 0.1U	1	
C4012	F2A1C221A019	16V 220U	1	
C4013	ECJ1VC1H121J	50V 120P	1	
C4014	ECJ1VC1H121J	50V 120P	1	
C4015	ECJ1VC1H102J	50V 1000P	1	
C4016	ECJ1VC1H102J	50V 1000P	1	
C4017	ECJ1VF1C104Z	16V 0.1U	1	
C4018	F2A1C471A236	16V 47U	1	
C4019	F2A1H1R0A236	50V 1U	1	
C4020	F2A1H1R0A236	50V 1U	1	
C4021	F2A1E470A205	25V 47U	1	
C4022	F2A1E470A205	25V 47U	1	
C4023	F2A1H100A236	50V 10U	1	
C4024	F2A1H100A236	50V 10U	1	
C4025	F2A1E470A205	25V 47U	1	
C4026	F2A1E470A205	25V 47U	1	
C4027	ECJ1VC1H102J	50V 1000P	1	
C4028	ECJ1VC1H102J	50V 1000P	1	
C4029	ECJ1VC1H102J	50V 1000P	1	
C4030	ECJ1VC1H102J	50V 1000P	1	
C4031	F2A0J471A247	6.3V 47U	1	
C4033	ECQV1H104JL3	50V 0.1U	1	
C4034	ECJ1VF1C104Z	16V 0.1U	1	
C4035	ECJ1VF1C104Z	16V 0.1U	1	
C4036	ECQV1H104JL3	50V 0.1U	1	
C4904	F2A0J470A599	6.3V 47U	1	
C4905	ECJ1VF1C104Z	16V 0.1U	1	
C7403	ECJ1VB1C104K	16V 0.1U	1	
C7404	ECJ1VB1H102K	50V 1000P	1	
C7504	ECJ1VC1H101J	50V 100P	1	
C7505	ECJ1VC1H101J	50V 100P	1	
C7506	ECJ1VC1H101J	50V 100P	1	
C7507	ECJ1VB1H103K	50V 0.01U	1	
C7508	ECJ1VB1H103K	50V 0.01U	1	
C7509	ECJ1VB1H103K	50V 0.01U	1	
C7512	ECJ1VC1H240J	50V 24	1	
C7513	ECJ1VC1H270J	50V 27P	1	
C7514	ECJ1VB1C104K	16V 0.1U	1	
C7516	ECJ1VB1C104K	16V 0.1U	1	
C7519	ECJ1VB1C104K	16V 0.1U	1	
C7521	ECJ1VC1H101J	50V 100P	1	
C7522	F2A0J470A245	6.3V 47U	1	
C7523	F1H1A105A028	10V 1U	1	
C7524	F2A1H100A820	50V 10P	1	
C7525	ECJ1VF1A105Z	10V 1U	1	
C7527	F2A1C221A877	16V 220P	1	
C7530	F2A1C221A877	16V 220P	1	
C7531	ECQB1H392KF3	50V 3900P	1	
C7532	F2A1V470A654	35V 47P	1	
C7533	F2A1H100A820	50V 10P	1	
C7538	F2A0J471A574	6.3V 47U	1	
C7559	ECJ1VB0J105K	6.3V 1U	1	
C7560	ECJ1VB1H103K	50V 0.01U	1	
C7561	ECJ1VB1C104K	16V 0.1U	1	
C7823	F2A0J470A245	6.3V 47U	1	
C7824	ECJ1VB1H103K	50V 0.01U	1	
C7825	F2A1H1R0A234	50V 1U	1	
C7826	ECJ1VB1H103K	50V 0.01U	1	
C7827	F1H1H470A799	50V 47P	1	
C7828	F1H1H470A799	50V 47P	1	
C7829	ECJ1VB1H103K	50V 0.01U	1	
C7830	F2A0J470A245	6.3V 47U	1	
C8001	F1H1H220A799	50V 22P	1	
C8002	F1H1H220A799	50V 22P	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C8003	ECJ1VB1C104K	16V 0.1U	1	
C8004	ECJ1VC1H101J	50V 100P	1	
C8006	ECJ1VB1C104K	16V 0.1U	1	
C8007	ECJ1VB1C104K	16V 0.1U	1	
C8008	ECJ1VB1C104K	16V 0.1U	1	
C8010	ECJ1VC1H101J	50V 100P	1	
C8013	ECJ1VF1A105Z	10V 1U	1	
D4001	MA2C165001VT	DIODE	1	
D4002	MA3Z142D0LG	DIODE	1	
D4003	MA3Z142D0LG	DIODE	1	
D7401	B0JACE000001	DIODE	1	
D7502	MA2C165001VT	DIODE	1	
D7504	MAZ4180NHF	DIODE	1	
D7506	B0JAMD000026	DIODE	1	
D7507	B0AADM000003	DIODE	1	
D7508	B0AADM000003	DIODE	1	
D7509	B0JACE000001	DIODE	1	
D7510	B0JDCE000002	DIODE	1	
D7511	MAZ4220NLF	DIODE	1	
D7512	B0BA03600021	DIODE	1	
D7801	B0BA03000015	DIODE	1	
DP7501	A2BD00000145	DISPLAY TUBE	1	
IC1502	C0CBCDD00027	IC	1	
IC1504	C0DBGHF00001	IC	1	
IC1505	C0CBCDC00052	IC	1	
IC1506	C0DAEYH00002	IC	1	
IC1507	C0CBCBD00048	IC	1	
IC1510	C0EBJ0000143	IC	1	
IC3001	C1AB00001979	IC	1	
IC4001	C1AB00001920	IC	1	
IC4002	C0DBAHD00013	IC	1	
IC4003	C0CBCDC00027	IC	1	
IC4901	B32AZ0000016	IC	1	
IC7401	RFKFM6016KT	IC	1	(PAVC-CSG)
IC7501	MN67788RA	IC	1	
IC7504	COABBA000073	IC	1	
IC7514	C0EBJ0000336	IC	1	
IC8001	C2BBFD000536	IC	1	
IC8002	C0EBE0000504	IC	1	
IP1501	K5H302100004	IC PROTECTOR	1	
IP7501	K5H7512A0010	IC PROTECTOR	1	
IR7501	PNA4618M09VT	REMOTE SENSOR	1	
JK3901	K2HE219B0004	JACK, OUT/IN1	1	
JK3902	K2HE217B0001	JACK	1	
JK3903	K2HA304B0007	JACK, COMPONENT VIDEO OUT	1	
JK3905	K2HE1YYB0002	JACK, L2	1	
JK8001	K2HC104B0013	JACK, G LINK	1	
JW7501	VWJ02F0060VV	FRONT (L) WIRE 1	1	
K7502	ERJ3GEY0R00V	1/10W 0	1	
K7503	ERJ3GEY0R00V	1/10W 0	1	
K7507	ERJ3GEY0R00V	1/10W 0	1	
K7509	ERJ3GEY0R00V	1/10W 0	1	
K7512	ERJ3GEY0R00V	1/10W 0	1	
K7514	ERJ3GEY0R00V	1/10W 0	1	
K7519	ERJ3GEY0R00V	1/10W 0	1	
K7521	ERJ3GEY0R00V	1/10W 0	1	
K7702	ERJ6GEY0R00V	1/8W 0	1	
K7801	ERJ3GEY0R00V	1/10W 0	1	
L1504	G0A100ZA0041	COIL 10UH	1	
L1505	G0A100ZA0041	COIL 10UH	1	
L3001	G0C220JA0019	COIL 22UH	1	
L3002	G0C220JA0019	COIL 22UH	1	
L7501	G0C390JA0055	COIL 39UH	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
L7503	G0C220JA0019	COIL 22UH	1	
LB1502	J0JHC0000048	FILTER	1	
LB1503	J0JHC0000048	FILTER	1	
LB1505	J0JHC0000048	FILTER	1	
LB1506	J0JHC0000048	FILTER	1	
LB3911	J0JGC0000020	COIL	1	
LB3912	J0JCC0000103	COIL	1	
LB3913	J0JCC0000103	COIL	1	
LB3914	J0JCC0000103	COIL	1	
LB3915	J0JCC0000103	COIL	1	
LB3916	J0JCC0000103	COIL	1	
LB3917	J0JGC0000020	COIL	1	
LB4901	J0JHC0000032	COIL	1	
LB4911	J0JCC0000103	COIL	1	
LB4912	J0JCC0000103	COIL	1	
LB4913	J0JCC0000103	COIL	1	
LB4914	J0JCC0000103	COIL	1	
LB7401	J0JHC0000048	FILTER	1	
LB7402	J0JHC0000048	FILTER	1	
LB7403	J0JGC0000020	COIL	1	
LB7404	J0JCC0000103	COIL	1	
LB7405	J0JCC0000103	COIL	1	
LB7406	J0JGC0000020	COIL	1	
LB7407	J0JGC0000020	COIL	1	
LB7409	J0JHC0000048	FILTER	1	
LB7410	J0JHC0000048	FILTER	1	
LB7501	ERJ3GEY0R00V	1/10W 0	1	
LB7503	ERJ3GEY0R00V	1/10W 0	1	
LB7504	ERJ3GEY0R00V	1/10W 0	1	
LB7801	J0JHC0000032	COIL	1	
LB7802	J0JHC0000032	COIL	1	
LB8001	J0JHC0000032	COIL	1	
P1501	K1KA23A00003	CONNECTOR(23P)	1	
P1503	K1KA04AA0301	CONNECTOR(4P)	1	
P7401	K1KA88A00002	CONNECTOR(88P)	1	
P7502	K1KY10AA0107	CONNECTOR(10P)	1	
Q1501	B1DHED000008	TRANSISTOR	1	
Q1503	B1DHED000008	TRANSISTOR	1	
Q4001	2SD132800L	TRANSISTOR	1	
Q4002	2SD132800L	TRANSISTOR	1	
Q4003	2SD132800L	TRANSISTOR	1	
Q4004	2SD132800L	TRANSISTOR	1	
Q7401	B1CFHC000003	TRANSISTOR	1	
Q7402	B1CFHC000003	TRANSISTOR	1	
Q7501	2SD132800L	TRANSISTOR	1	
Q7502	B1BABK000001	TRANSISTOR	1	
Q7503	2SD0601A0L	TRANSISTOR	1	
Q7504	2SD0601A0L	TRANSISTOR	1	
Q7505	2SD0601A0L	TRANSISTOR	1	
Q7509	B1ABMD000004	TRANSISTOR	1	
Q7510	2SD0601A0L	TRANSISTOR	1	
Q7511	2SD0601A0L	TRANSISTOR	1	
Q7513	B1CFHC000003	TRANSISTOR	1	
Q7514	2SD0601A0L	TRANSISTOR	1	
Q7801	B1ADCF000154	TRANSISTOR	1	
Q8001	2SD0601A0L	TRANSISTOR	1	
Q8002	2SD0601A0L	TRANSISTOR	1	
Q8003	2SD0601A0L	TRANSISTOR	1	
Q8004	2SD132800L	TRANSISTOR	1	
Q8005	2SB0710ARL	TRANSISTOR	1	
QR1501	UNR521300L	TRANSISTOR	1	
QR1502	UNR521300L	TRANSISTOR	1	
QR1503	UNR521300L	TRANSISTOR	1	
QR4001	UNR521100L	TRANSISTOR	1	
QR4002	UNR511100L	TRANSISTOR	1	
QR4003	UNR521100L	TRANSISTOR	1	
QR7501	UNR511300L	TRANSISTOR	1	
QR7503	UNR511300L	TRANSISTOR	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R1503	ERJ3GEYJ471V	1/10W 470	1	
R1509	ERJ3RBD393V	1/16W 39K	1	
R1510	ERJ3RBD152V	1/16W 1.5K	1	
R1511	ERJ3RBD113V	1/16W 11K	1	
R1518	ERJ3GEYJ472V	1/10W 4.7K	1	
R1519	ERJ3GEYJ472V	1/10W 4.7K	1	
R1521	ERJ3GEYJ473V	1/10W 47K	1	
R1522	ERJ3GEYJ223V	1/10W 22K	1	
R1527	ERJ3GEYJ822V	1/10W 8.2K	1	
R1528	ERJ3GEYJ823V	1/10W 82K	1	
R1529	ERJ3GEYJ222V	1/10W 2.2K	1	
R3001	ERJ3GEYJ105V	1/10W 1M	1	
R3002	ERJ3GEYJ750V	1/10W 75	1	
R3004	ERJ3GEYJ221V	1/10W 220	1	
R3005	ERJ3GEYJ221V	1/10W 220	1	
R3006	ERJ3RBD153V	1/16W 15K	1	
R3007	ERJ3RBD104V	1/16W 100K	1	
R3009	ERJ3GEYJ103V	1/10W 10K	1	
R3010	ERJ3GEYJ103V	1/10W 10K	1	
R3011	ERJ3GEYJ103V	1/10W 10K	1	
R3012	ERJ3RBD472V	1/16W 4.7K	1	
R3013	ERJ3RBD472V	1/16W 4.7K	1	
R3014	ERJ3RBD472V	1/16W 4.7K	1	
R3015	ERJ3RBD472V	1/16W 4.7K	1	
R3016	ERJ3RBD472V	1/16W 4.7K	1	
R3901	ERJ3GEYJ750V	1/10W 75	1	
R3902	ERJ3GEYJ750V	1/10W 75	1	
R3903	ERJ3GEYJ102V	1/10W 1K	1	
R3904	ERJ3GEYJ102V	1/10W 1K	1	
R3905	ERJ3GEYJ750V	1/10W 75	1	
R3906	ERJ3GEYJ750V	1/10W 75	1	
R3907	ERJ3GEYJ750V	1/10W 75	1	
R3908	ERJ3GEYJ750V	1/10W 75	1	
R3909	ERJ3GEYJ912V	1/10W 9.1K	1	
R3910	ERJ3GEYJ912V	1/10W 9.1K	1	
R3911	ERJ3GEYJ750V	1/10W 75	1	
R3912	ERJ3GEYJ750V	1/10W 75	1	
R3913	ERJ3GEYJ750V	1/10W 75	1	
R3914	ERJ3GEYJ750V	1/10W 75	1	
R3915	ERJ3GEYJ750V	1/10W 75	1	
R3916	ERJ3GEYJ750V	1/10W 75	1	
R3918	ERJ3GEYJ750V	1/10W 75	1	
R3919	ERJ3GEYJ750V	1/10W 75	1	
R3920	ERJ3GEYJ750V	1/10W 75	1	
R3926	ERJ3GEYJ102V	1/10W 1K	1	
R3927	ERJ3GEYJ750V	1/10W 75	1	
R3928	ERJ3GEYJ750V	1/10W 75	1	
R3929	ERJ3GEYJ750V	1/10W 75	1	
R4001	ERJ3GEYJ104V	1/10W 100K	1	
R4002	ERJ3GEYJ104V	1/10W 100K	1	
R4003	ERJ3GEYJ102V	1/10W 1K	1	
R4004	ERJ3GEYJ102V	1/10W 1K	1	
R4005	ERJ3GEYJ102V	1/10W 1K	1	
R4006	ERJ3GEYJ102V	1/10W 1K	1	
R4009	ERJ3GEYJ104V	1/10W 100K	1	
R4010	ERJ3GEYJ104V	1/10W 100K	1	
R4011	ERJ3GEYJ104V	1/10W 100K	1	
R4012	ERJ3GEYJ104V	1/10W 100K	1	
R4013	ERJ3GEYJ101V	1/10W 100	1	
R4014	ERJ3GEYJ101V	1/10W 100	1	
R4015	D0HB153ZA002	1/10W 15K	1	
R4016	D0HB561ZA002	1/10W 560	1	
R4017	D0HB561ZA002	1/10W 560	1	
R4018	D0HB153ZA002	1/10W 15K	1	
R4019	ERJ3GEYJ102V	1/10W 1K	1	
R4020	ERJ3GEYJ102V	1/10W 1K	1	
R4021	D0HB103ZA002	1/10W 10K	1	
R4022	D0HB103ZA002	1/10W 10K	1	
R4023	ERJ3GEYJ104V	1/10W 100K	1	
R4024	ERJ3GEYJ104V	1/10W 100K	1	
R4025	D0HB622ZA002	1/16W 6.2K	1	
R4026	D0HB622ZA002	1/16W 6.2K	1	
R4027	D0HB392ZA002	1/16W 3.9K	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R4028	D0HB392ZA002	1/16W 3.9K	1	
R4029	ERJ3GEYJ103V	1/10W 10K	1	
R4030	ERJ3GEYJ473V	1/10W 47K	1	
R4031	ERJ3GEYJ473V	1/10W 47K	1	
R4032	ERJ3GEYJ681V	1/10W 680	1	
R4033	ERJ3GEYJ681V	1/10W 680	1	
R4034	ERJ3GEYJ272V	1/10W 2.7K	1	
R4035	ERJ3GEYJ272V	1/10W 2.7K	1	
R4036	ERJ3GEYJ681V	1/10W 680	1	
R4037	ERJ3GEYJ681V	1/10W 680	1	
R4038	ERJ3GEYJ272V	1/10W 2.7K	1	
R4039	ERJ3GEYJ272V	1/10W 2.7K	1	
R4040	ERJ3GEYJ221V	1/10W 220	1	
R4041	ERJ3GEYJ221V	1/10W 220	1	
R4042	ERJ3GEYJ221V	1/10W 220	1	
R4043	ERJ3GEYJ221V	1/10W 220	1	
R4901	ERJ3GEY0R00V	1/10W 0	1	
R4902	ERJ3GEY0R00V	1/10W 0	1	
R7401	ERJ3GEY0R00V	1/10W 0	1	
R7402	ERJ3GEYJ472V	1/10W 4.7K	1	
R7403	ERJ3GEYJ472V	1/10W 4.7K	1	
R7404	ERJ3GEY0R00V	1/10W 0	1	
R7406	ERJ3GEYJ472V	1/10W 4.7K	1	
R7439	ERJ3GEYJ223V	1/10W 22K	1	
R7501	ERJ3GEYJ473V	1/10W 47K	1	
R7502	ERJ3GEYJ473V	1/10W 47K	1	
R7504	ERJ3GEY0R00V	1/10W 0	1	
R7505	ERJ3GEY0R00V	1/10W 0	1	
R7506	ERJ3GEYJ822V	1/10W 8.2K	1	
R7507	ERJ3GEYJ473V	1/10W 47K	1	
R7508	ERJ3GEYJ473V	1/10W 47K	1	
R7509	ERJ3GEYJ473V	1/10W 47K	1	
R7510	ERJ3GEYJ822V	1/10W 8.2K	1	
R7513	ERJ3GEYJ472V	1/10W 4.7K	1	
R7514	ERJ3GEYJ101V	1/10W 100	1	
R7515	ERJ3GEYJ101V	1/10W 100	1	
R7516	ERJ3GEYJ101V	1/10W 100	1	
R7517	ERJ3GEYJ822V	1/10W 8.2K	1	
R7518	ERJ3GEYJ101V	1/10W 100	1	
R7519	ERJ3GEYJ101V	1/10W 100	1	
R7520	ERJ3GEYJ101V	1/10W 100	1	
R7521	ERJ3GEYJ101V	1/10W 100	1	
R7522	ERJ3GEYJ101V	1/10W 100	1	
R7523	ERJ3GEYJ101V	1/10W 100	1	
R7524	ERJ3GEYJ101V	1/10W 100	1	
R7525	ERJ3GEYJ103V	1/10W 10K	1	
R7526	ERJ3GEYJ472V	1/10W 4.7K	1	
R7527	ERJ3GEYJ472V	1/10W 4.7K	1	
R7528	ERJ3GEYJ472V	1/10W 4.7K	1	
R7530	ERJ3GEY0R00V	1/10W 0	1	
R7531	ERJ3GEY0R00V	1/10W 0	1	
R7532	ERJ3GEYJ101V	1/10W 100	1	
R7533	ERJ3GEYJ104V	1/10W 100K	1	
R7534	ERJ3GEYJ223V	1/10W 22K	1	
R7535	ERJ3GEYJ101V	1/10W 100	1	
R7540	ERJ3GEY0R00V	1/10W 0	1	
R7541	ERJ3GEYJ101V	1/10W 100	1	
R7543	ERJ3GEYJ103V	1/10W 10K	1	
R7545	ERDS2TJ271T	1/4W 270	1	
R7548	ERJ3GEYJ103V	1/10W 10K	1	
R7549	ERJ3GEYJ473V	1/10W 47K	1	
R7550	ERJ3GEYJ562V	1/10W 5.6K	1	
R7551	ERJ3GEYJ470V	1/10W 47	1	
R7552	ERJ3GEYJ473V	1/10W 47K	1	
R7553	ERJ3GEYJ473V	1/10W 47K	1	
R7558	ERJ3GEYJ103V	1/10W 10K	1	
R7559	ERJ3GEYJ103V	1/10W 10K	1	
R7560	ERJ3GEYJ102V	1/10W 1K	1	
R7562	ERJ3GEYJ472V	1/10W 4.7K	1	
R7563	ERJ3GEYJ101V	1/10W 100	1	
R7564	ERJ3GEYJ103V	1/10W 10K	1	
R7565	ERJ3GEYJ103V	1/10W 10K	1	
R7566	ERJ3GEYJ103V	1/10W 10K	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R7567	ERJ3GEYJ821V	1/10W 820	1	
R7568	ERJ3GEYJ303V	1/10W 30K	1	
R7569	ERJ3GEYJ472V	1/10W 4.7K	1	
R7570	ERJ3GEYJ103V	1/10W 10K	1	
R7571	ERJ3GEYJ101V	1/10W 100	1	
R7572	ERJ3GEYJ103V	1/10W 270K	1	
R7573	ERJ3GEYJ274V	1/10W 47K	1	
R7574	ERJ3GEYJ473V	1/10W 47K	1	
R7575	ERJ3GEYJ473V	1/10W 47K	1	
R7576	ERJ3GEYJ101V	1/10W 100	1	
R7582	ERJ3GEYJ473V	1/10W 47K	1	
R7584	ERJ3GEYJ101V	1/10W 100	1	
R7585	ERJ3GEYJ473V	1/10W 47K	1	
R7586	ERJ3GEYJ473V	1/10W 47K	1	
R7587	ERJ3GEYJ473V	1/10W 47K	1	
R7588	ERJ3GEYJ103V	1/10W 10K	1	
R7589	ERJ3GEY0R00V	1/10W 0	1	
R7590	ERJ3GEYJ473V	1/10W 47K	1	
R7591	ERJ3GEYJ473V	1/10W 47K	1	
R7592	ERJ3GEYJ473V	1/10W 47K	1	
R7593	ERJ3GEYJ473V	1/10W 47K	1	
R7594	ERJ3GEYJ101V	1/10W 100	1	
R7595	ERJ3GEYJ101V	1/10W 100	1	
R7596	ERJ3GEYJ101V	1/10W 100	1	
R7597	ERJ3GEYJ101V	1/10W 100	1	
R7598	ERDS2TJ470T	1/4W 47	1	
R7599	ERJ3GEYJ473V	1/10W 47K	1	
R7600	ERJ3GEYJ272V	1/10W 2.7K	1	
R7601	ERJ3GEYJ272V	1/10W 2.7K	1	
R7603	ERJ3GEYJ562V	1/10W 5.6K	1	
R7604	ERJ3GEYJ163V	1/10W 16K	1	
R7605	ERJ3GEYJ562V	1/10W 5.6K	1	
R7704	ERJ3GEYJ102V	1/10W 1K	1	
R7801	J0JCC0000103	COIL	1	
R7802	J0JCC0000103	COIL	1	
R7812	ERDS2TJ102T	1/4W 1K	1	
R7814	ERJ3GEYJ681V	1/10W 680	1	
R7815	J0JCC0000103	COIL	1	
R7816	J0JCC0000103	COIL	1	
R8001	ERJ3GEYJ103V	1/10W 10K	1	
R8002	ERJ3GEYJ101V	1/10W 100	1	
R8003	ERJ3GEYJ101V	1/10W 100	1	
R8004	ERJ3GEYJ101V	1/10W 100	1	
R8005	ERJ3GEYJ101V	1/10W 100	1	
R8006	ERJ3GEYJ103V	1/10W 10K	1	
R8009	ERJ3GEYJ332V	1/10W 3.3K	1	
R8010	ERJ3GEYJ752V	1/10W 7.5K	1	
R8012	ERJ3GEY0R00V	1/10W 0	1	
R8013	ERJ3GEYJ472V	1/10W 4.7K	1	
R8016	ERJ3GEYJ103V	1/10W 10K	1	
R8017	ERJ6GEYJ241V	1/8W 240	1	
R8018	ERJ3GEYJ220V	1/10W 22	1	
R8019	ERJ3GEYJ752V	1/10W 7.5K	1	
R8021	ERJ3GEYJ223V	1/10W 22K	1	
R8023	ERJ3GEYJ473V	1/10W 47K	1	
R8024	ERJ3GEYJ752V	1/10W 7.5K	1	
R8028	ERJ3GEYJ103V	1/10W 10K	1	
R8029	ERJ6GEYJ241V	1/8W 240	1	
R8030	ERJ3GEYJ221V	1/10W 220	1	
R8031	ERJ3GEYJ221V	1/10W 220	1	
R8035	ERJ3GEYJ103V	1/10W 10K	1	
R8036	ERJ3GEY0R00V	1/10W 0	1	
S7501	EVQ11A04M	SWITCH,	1	
S7502	EVQ11A04M	SWITCH,	1	
S7503	EVQ11A04M	SWITCH,	1	
S7504	EVQ11A04M	SWITCH,	1	
S7505	EVQ11A04M	SWITCH,	1	
S7506	EVQ11A04M	SWITCH,	1	
S7507	EVQ11A04M	SWITCH,	1	
T7501	G4D1A0000117	TRANSFORMER	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
TU7801	ENGD6401DF	TV TUNERS	1	
W501	ERJ6GEY0R00V	1/8W 0	1	
W503	ERJ3GEY0R00V	1/10W 0	1	
W504	ERJ3GEY0R00V	1/10W 0	1	
W505	ERJ3GEY0R00V	1/10W 0	1	
W506	ERJ6GEY0R00V	1/8W 0	1	
W507	ERJ3GEY0R00V	1/10W 0	1	
W508	ERJ3GEY0R00V	1/10W 0	1	
W509	ERJ3GEY0R00V	1/10W 0	1	
W510	ERJ3GEY0R00V	1/10W 0	1	
W511	ERJ3GEY0R00V	1/10W 0	1	
W512	ERJ6GEY0R00V	1/8W 0	1	
W513	ERJ6GEY0R00V	1/8W 0	1	
W514	ERJ3GEY0R00V	1/10W 0	1	
W515	ERJ6GEY0R00V	1/8W 0	1	
W516	ERJ3GEY0R00V	1/10W 0	1	
W517	ERJ3GEY0R00V	1/10W 0	1	
W518	ERJ3GEY0R00V	1/10W 0	1	
W519	ERJ3GEY0R00V	1/10W 0	1	
W520	ERJ6GEY0R00V	1/8W 0	1	
W521	ERJ6GEY0R00V	1/8W 0	1	
W522	ERJ3GEY0R00V	1/10W 0	1	
W523	ERJ3GEY0R00V	1/10W 0	1	
W524	ERJ6GEY0R00V	1/8W 0	1	
W525	ERJ6GEY0R00V	1/8W 0	1	
W526	ERJ3GEY0R00V	1/10W 0	1	
W527	ERJ3GEY0R00V	1/10W 0	1	
W528	ERJ3GEY0R00V	1/10W 0	1	
W529	ERJ3GEY0R00V	1/10W 0	1	
W530	ERJ3GEY0R00V	1/10W 0	1	
X7502	HOA327200108	CRYSTAL OSCILLATOR	1	
X7503	EFOMC1005T4	OSCILLATOR	1	
X8001	HOD800400020	CRYSTAL OSCILLATOR	1	
■		CASING/ACCESSORY/PACKING		
1	RFKNEH55P	RAM/DIGITAL P.C.B. MODULE	1	(RTL) (P9)
1	RFKNEH55PC	RAM/DIGITAL P.C.B. MODULE	1	(RTL) (PC9)
2	VEP79138K	DIGITAL P.C.B.	1	(RTL)
3	VEP71108A	POWER SUPPLY P.C.B.	1	(RTL)
4	VEP73135A	DV JACK P.C.B.	1	(RTL)
5	VEP73136A	SD CARD P.C.B.	1	(RTL)
6	RHD30111-3J	SCREW	20	
7	RFKB79116BT	MAIN P.C.B.	1	(RTL)
8	VEK0K00	FFC (40P)	1	
10	RHD30119-L	SCREW	13	
11	L6FAJDAE0002	FAN MOTOR	1	
12	VEP70135A	FRONT (L) P.C.B.	1	(RTL)
13	N5EZZ0000003	HDD CONNECTOR	1	
14	RMQ1566	GASKET	2	
15	RHD32001	SCREW	4	
16	RGR0365F-E	REAR PANEL	1	(P9) △
16	RGR0365F-F	REAR PANEL	1	(PC9) △
17	RMA1979A	DIGITAL ANGLE A	1	
18	RMQ1513	HEAT TRANSFER SHEET	1	
19	RMQ1514	HEAT TRANSFER SHEET D	1	
20	RMV0312	SHEET COVER	1	
21	RKA0186-K	FOOT RUBBER	4	
22	RMR1766-K	SD CARD HOLDER ASS'Y	1	
23	XSN3+4FJ	SCREW	2	
24	XTN2+8GFJ	SCREW	2	
25	RMN0841	HDD BRACKET	1	
26	RMC0672	PLATE SPRING	1	
27	RYM0357	HEAT SINK	1	
28	RMX0361	PCB SPACER	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
30	VJF0036	NYLON RIVET	2	
32	RYP1308A-S	FRONT PANEL ASS'Y	1	
32-1	RGK1968A-Q	FL ORNAMENT	1	
32-2	RGK1971A-S	REC BUTTON RING	1	
32-3	RYF0798J-S	PANEL DOOR ASS'Y	1	
32-4	RKF0751A-K	TRAY DOOR	1	
32-5	VMB3410	TRAY SPRING	1	
32-6	RHD26045	SCREW	2	
32-8	RKF0754-K	SD BLINDER	1	
32-9	RMB0841-1	SD LID SPRING	1	
32-10	RMR1767-K	SD CHASSIS	1	
33	RKM0552A-S	TOP CASE	1	△
34	VMX1336	MINI CARD SPACER	1	
35	RFKV0072HDK	HDD 200GB	1	
36	RKA0184-K	LEG SHEET	1	
37	VEP73137A	HDMI P.C.B.	1	(RTL)
38	VEK0J99	HDD POWER CABLE	1	
39	VEK0K01	FFC (20P)	1	
40	VEK0K02	FFC (40P)	1	
42	RHD30113	SCREW	2	
43	VKC0295	NYLON RIVET	2	
44	XYN3+J8FJ	SCREW	3	
A1	EUR7659YR0	REMOTE CONTROL ASS'Y	1	
A1-1	UR76EC5903A	BATTERY COVER	1	
A2	K2CB2CB00018	AC CORD	1	△
A3	K2KA6BA00003	AV CORD	1	
A4	K2KZ2BA00001	RF COAXIAL CABLE	1	
A5	RPQF0220-1	ACCESSORY BOX	1	
A6	K2ZZ04C00001	IR BLUSTER	1	
A7	RQCA1486	SET-UP GUIDE	1	
A7	RQCA1487	SET-UP GUIDE	1	(PC9)
A9	RPFC0031-B	POLYETHYLENE BAG	1	
A10	RQT8365-P	OPERATING INSTRUCTIONS	1	(IA) △
A10	RQT8366-C	OPERATING INSTRUCTIONS	1	(IB) (PC9) △
A11	RQCC2825-1	DVD MEDIA SHEET	1	(P9)
PC1	RPG7947-1	PACKING CASE	1	(P9)
PC1	RPG7948	PACKING CASE	1	(PC9)
PC2	RPN1859A-2	CUSHION(A)	1	
PC3	RPNCO138	FRONT CUSHION	1	
PC4	RPFC0026-B	POLYETHYLENE BAG	1	
PC5	RPN1859B-2	CHSHION(B)	1	